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Incomplete Financial Contracts and Non-contractual Legal Rules: The Case of Debt Capacity and Fraudulent Conveyance Law*

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This paper illustrates how non-contractual legal rules sometimes alleviate contractual incompleteness. A serious incompleteness in debt contracts is the borrower's ability to fraudulently transfer assets to third parties, rendering the borrower insolvent. The incompleteness arises because contractual remedies are ineffective against third-party transferees who are not bound by the debt contract, while the borrower has no assets to recover. Fraudulent conveyance law is a non-contractual legal rule allowing recovery against these transferees. This increases debt capacity most dramatically for borrowers with highly liquid assets. Without non-contractual legal rules, high liquidation value implies low debt capacity. *Journal of Economic Literature* Classification Numbers: G32; G38.

I. INTRODUCTION

Financial contracts are often incomplete contracts.[1] Recent work shows that contractual agreements are limited in their ability to prevent parties from behaving

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[1] Hart (1995, p. 23) describes three factors leading to contractual incompleteness:

> First, in a complex and highly unpredictable world, it is hard for people to think very far ahead and to plan for all the various contingencies that may arise. Second, even if individual plans can be made, it is hard for the contracting parties to negotiate about these plans, not least because they have to find a common language to describe states and actions with respect to which prior experience may not provide much of a guide. Third, even if the parties can

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opportunistically *ex post*, despite the fact that these parties would benefit from this prevention *ex ante* (see, for example, Aghion and Bolton, 1992; Hart, 1995; Hart and Moore, 1995). But not all legal rights arise from contractual agreement. Instead, many legal rules are non-contractual. For example, tort law is non-contractual, yet it imposes the duty to act with reasonable care in most every conceivable circumstance. If, for example, a negligent motorist changing the radio dial hits a pedestrian, he will be found liable for the pedestrian's injuries regardless of the absence of contractual agreement between them. Criminal law is also non-contractual. Indeed, as the assisted suicide cases illustrate well, private parties cannot "opt out" of criminal penalties. Even the background rules affecting principal–agent problems generally—made up of the law of agency—are mostly non-contractual (see Orts, 1998). This raises the question, Why are non-contractual legal rules so ubiquitous?

This paper explores how one non-contractual legal rule alleviates a serious incompleteness that otherwise exists in debt contracts between borrowers and lenders. The incompleteness addressed is the borrower's ability to fraudulently transfer assets, depriving the lender of his or her source of repayment. In the simplest debt contract, a lender provides money today for the borrower's promise to repay money in the future. After the borrower receives the proceeds of the loan, however, the borrower's insiders (that is, its owners and managers) enjoy a first-mover advantage that allows them to transfer the borrower's assets, leaving the lender with no source of repayment. There are many ways borrowers can effect such transfers. Examples include causing the borrower to pay exorbitant dividends and salaries to the borrower's insiders, conducting a leveraged buyout of the borrower's equity in excess of its value, causing the borrower to provide no-recourse financing to a third party for an overvalued purchase of some asset from the borrower's insiders, causing the borrower to make concessionary personal loans to the borrower's insiders, causing the firm to make loans to shell corporations owned by the borrower's insiders or third parties who share the proceeds with the insiders, and exchanging assets at exaggerated prices benefiting the borrower's insiders.[2] The essence of this contractual incompleteness is that third-party transferees to whom assets are fraudulently transferred are, by definition, not parties to the debt contract. This means they are not susceptible to a breach of contract action by the lender. Purely contractual mechanisms provide few answers to the problem. It is practically impossible (and certainly too costly) to bind all possible third parties at the time the contract is written, since the set of potential third-party transferees

> plan and negotiate about the future, it may be very difficult for them to write their plans down in such a way that, in the event of a dispute, an outside authority—a court, say—can figure out what these plans mean and enforce them.

This paper highlights an additional form of incompleteness: it may be impossible for contracting parties to achieve a mutual goal when third parties cannot be bound by the contract and where those third parties are in a position to frustrate the mutual goal *ex post.*

[2] See Akerlof and Romer (1993) for a general discussion of "looting" a firm through superficially legitimate transactions.

would feasibly include every other existing person, whether a natural person or a legal entity like a trust or shell corporation. Unable to commit to not fraudulently transferring assets in states of the world where such transfers are in their interest and where proceeds can be shielded from the lender's contractual remedy, the borrower's debt capacity is severely limited.

Fraudulent conveyance law is a non-contractual legal rule that addresses this incompleteness. Found in both the federal bankruptcy laws (at 11 U.S.C. Section 548) and state statutory law (e.g., the Uniform Fraudulent Transfer Act), fraudulent conveyance law forbids an important subset of all possible transactions of this sort: those where the borrower receives less than "reasonably equivalent value"[3] for the asset transfer and is insolvent after it occurs. This non-contractual legal rule overcomes contractual incompleteness by providing a way to recover against *transferees*—those third parties who are not themselves parties to the debt contract—by voiding the transactions that transferred assets to them.[4] The basic result of this paper formalizes a suggestion of Rose-Ackerman (1985, p. 951) that without fraudulent conveyance law "the volume of loans would be inefficiently low and interest rates inefficiently high to take account of this possibility of hiding assets from creditors." Fraudulent conveyance law meets the contractual incompleteness head-on, increasing debt capacity by creating a viable, non-contractual remedy against fraudulent asset transfers. Further, this paper shows why the benefits of this rule fall primarily on firms whose assets have high liquidation values. If a borrower can fraudulently transfer assets and sell them for their current liquidation values, then high liquidation values make fraudulent asset transfers more attractive. When such asset transfers are possible, high liquidation values necessarily *lower* debt capacity. Myers and Rajan (1998) call this the "paradox of liquidity." By helping to solve this problem, fraudulent conveyance law lays the legal foundation necessary to support the standard economic insight that high liquidation value implies high debt capacity (Williamson, 1988; Shleifer and Vishny, 1992).[5]

[3] The term "reasonably equivalent value" appears in both the federal bankruptcy laws and the Uniform Fraudulent Transfer Act, but is undefined in either. In practice, determining reasonably equivalent value simply involves, as one court put it, "compari[ng] . . . the value of what went out with the value of what came in" (*In re Southmark Corporation*, 138 B.R. 820, 829 (Bankr. N.D. Tex. 1992)). The current trend "rejects any fixed mathematical formula for determining reasonable equivalence and opts for the standard that reasonable equivalence should depend on all the facts of each case, an important element of which is market value" (*In re Morris Communications, Inc.*, 914 F.2d 458, 466-7 (4th Cir. 1990)).

[4] Fraudulent conveyance law is what legal scholars call a "property rule" and not a "liability rule." (see Calabresi and Melamed, 1972). Property rules strictly prohibit one party from infringing the rights of another by providing the injured party the power to actually prevent or rectify completely the damaging act. Liability rules provide only money damages. As money damages are clearly inadequate when the borrower is insolvent, the fraudulent transfer problem requires that the lender be able to seize the transferred assets, thus rectifying the damaging act itself. The characterization of fraudulent conveyance law as a property right is also explored by Rose-Ackerman (1985) and Karchin (1987).

[5] The ability to secure debt with the borrower's assets will also lead to this result. Security interests also require a non-contractual legal rule. I compare fraudulent conveyance law to security interests in Section VI.

A real-world example may help fix ideas. Consider the facts of *In re Da-Sota Elevator Co.*, 939 F.2d 654 (8th Cir. 1991). Da-Sota Elevator Co., an elevator maintenance company, was formed in 1986 by Richard Benson and Tom Murdorff. Benson managed one office and Murdorff managed another. In October 1989, Benson and Murdorff caused Da-Sota to sell its assets (for what the court later found to be less than reasonably equivalent value), including maintenance contracts, to separate companies: one owned by Benson and one owned by Murdorff. The agreement of sale provided that the new companies did not assume the debts of Da-Sota. Unsurprisingly, given the assignment of its major revenue-producing assets (the maintenance contracts), Da-Sota went bankrupt in November 1989. Since the new companies formed by Benson and Murdorff presumably were not parties to any of Da-Sota's debt contracts, and since the new companies had explicitly rejected debt assumption, there were no contractual remedies for recovering the transferred maintenance contracts. However, in January 1990, the bankruptcy trustee for Da-Sota's estate filed suit to avoid and set aside the transfer pursuant to the federal fraudulent conveyance law. The district court entered judgment to avoid the transfer of the maintenance contracts, finding that the transfer for less than reasonably equivalent value left Da-Sota insolvent.

This example arises out of a transaction that is less than 10 years old, but the contractual incompleteness addressed by fraudulent conveyance law is nothing new. Practically since the advent of credit, borrowers have attempted to escape lenders through fraudulent asset transfers. Treiman (1927) describes how English debtors of the middle ages escaped their creditors by hiding in their houses with goods bought on credit (called "keeping house"; English law did not allow creditors to violate the sanctity of a debtor's home for the mere pursuit of debt satisfaction), fleeing the realm with their goods to where the King's law could not follow (with any goods remaining behind escheating to the Crown, not to creditors), using legal process and government favors to escape imprisonment for fraudulent asset transfers, or residing with their fortunes in one of the numerous "sanctuaries," some as large as cities, where the King's law could not reach. In light of the seriousness of this particular contractual incompleteness, and the severe limits it would place on debt capacity, it is unsurprising that fraudulent conveyance law stretches back almost as far. The Statute of Elizabeth[6] (13 Eliz. c. 5) of 1571, titled "An Acte agaynst fraudulent Deedes Gyftes Alienations, &c."—and the precursor to

[6] Glenn (1940) provides an interesting discussion of the statute's background. Prior to the statute, there was sometimes available a direct appeal to the King's Privy Council. Consider, for example, the following case description of a matter that came before the Privy Council in 1542:

> Whereas one—Reid of the County of Norfolk, gentleman, had made upon certain conditions to—Withipole a plain sale of all his goods and lands, to have been made only to defraud his creditors, it was declared the same to be of no effect and the said creditors to be at liberty to sue their debts, the said bargain notwithstanding. (in Sir H. Nicholas, ed., "Proceedings and Ordinances of the Privy Council")

Of course, there could be no guarantee that one's claim would be heard by the King's Privy Council.

American fraudulent conveyance laws—along with later judicial refinements, provided creditors with a powerful tool for pursuing fraudulently transferred assets. Fraudulent conveyance law provides a fascinating early example of legal innovation in light of contractual incompleteness and one that remains powerful over four centuries later. Future work on incomplete contracts might benefit from further study of the role such non-contractual legal rules play.[7]

II. A SIMPLE MODEL

This section describes a simple two-period, three-date model. There is a borrower and a lender. Both the borrower and the lender are risk neutral and the discount rate is zero. Information is always symmetric. The borrower has an investment opportunity (the "project") but has no wealth of his or her own. This project requires an investment of K at time $t = 0$, financed by a debt contract with the lender.

At time $t = 0$ both the borrower and the lender know the joint distribution of the time $t = 1$ liquidation value of the project's assets, L, and the time $t = 2$ value of the project, V. I denote this joint distribution $F(L, V)$. The time $t = 1$ liquidation value L represents the price at which the assets of the firm can be sold at that date. The time $t = 2$ project value V is the final payoff to the project's assets at that date if operated by the borrower. L and V are asset values, but they need not reflect the values of the same assets at both dates. For example, in a manufacturing company, the assets at time $t = 1$ might be the plant and machinery plus raw materials, while the assets at time $t = 2$ might be the depreciated plant and finished goods. For a retailer, the assets at time $t = 1$ might be retail inventory held for sale, while the assets at time $t = 2$ might be the realized cash proceeds from the sale of that inventory (in addition to store fixtures, etc.).

Efficiency dictates that the project be financed if and only if $E(\max[L, V]) \geq K$, since then, and only then, the expected value of the project is higher than its cost. This criterion assumes the project will be liquidated when it is optimal to do so (when at time $t = 1$ the realized liquidation value is greater than the time $t = 2$ value of the project left if operated by the borrower). There are many reasons that the project may be worth more in another party's hands, including but not limited to managerial inefficiency, industry shocks, or economies of scale for another owner. The debt contract includes the promise that D will be repaid at time $t = 2$. By promising to pay D at time $t = 2$ the borrower can raise $E(D)$ at time $t = 0$, where $E(\cdot)$ is the expectation under the probability distribution $F(L, V)$ given the actions that the borrower will take for various realizations of L and V. The *debt capacity* of the project is the maximum amount of debt financing that can be

[7] For example, although it is sometimes analytically useful to think of the corporation as a "nexus of contracts," most of the rules governing the creation and governance of corporations are non-contractual. For one possible view of the relation between contracts and corporate law, see Easterbrook and Fischel (1992).

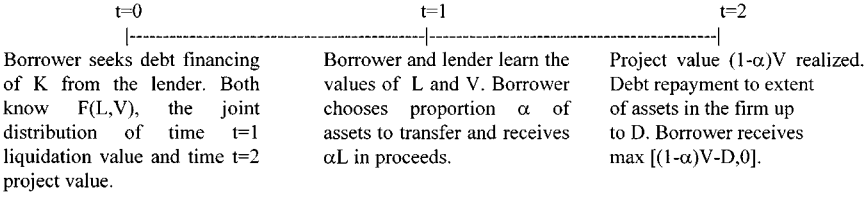

FIG. 1. Timeline.

raised, that is, the maximum possible expected debt repayment, $\max_D E(D)$. At time $t = 1$, a liquidation value L and the time $t = 2$ value V are realized from the distribution $F(L, V)$, and these are observed by both the borrower and the lender. This allows contracts to be written on time $t = 1$ observable values, if desired, but these contracts cannot be enforced until time $t = 2$. In other words, the judicial process necessary to seize the assets of the debtor is assumed to take one full period, as described further below.

The uncertainty about L and V is resolved at time $t = 1$. Given the realization of L and V, the borrower chooses the proportion $\alpha \in [0, 1]$ of the firm's assets to transfer at time $t = 1$. By selling these assets the borrower receives and pockets proceeds of αL. This transfer reduces time $t = 2$ project value to $(1 - \alpha)V$, implying constant returns to scale in the underlying assets of the firm.[8] Figure 1 presents a timeline.[9] The borrower has the opportunity to transfer assets because of the earlier assumption that the judicial process takes one full period. That is, (1) the process of proving up the judgment in court (i.e., proving that the debtor is liable on a debt contract and getting a judicial order for seizure of the debtor's assets) and (2) the delivery of the execution order to the sheriff and levy on the company's assets cannot be accomplished until time $t = 2$ if begun at time $t = 1$. The inherent delay in obtaining and enforcing a debt judgment is a well-known problem in creditors' rights (see Herbert, 1995). Under this assumption, the borrower can make an asset transfer immediately after observing the time $t = 1$ realization of L and V, but cannot make a transfer at time $t = 2$, when the debt contract is presumed to be

[8] Assuming that the reduction in time $t = 2$ project value is linear makes for a simpler model, but is easily generalized. For example, the transfer could reduce time $t = 2$ project value to $[1 - f(\alpha)]V$, where $f(\alpha)$ is bounded between 0 and 1, $f(0) = 0$, $f(1) = 1$, and $f'(\alpha) > 0$. The important point is that time $t = 1$ transfers reduce time $t = 2$ project value.

[9] This paper analyzes the role of fraudulent conveyance law in a simple two-period model where asset transfers are driven by potential benefits from the immediate value of firm assets. Other models are clearly possible. For example, an alternative approach would be to analyze the role of fraudulent conveyance law (and its absence) when borrowers may acquire a reputation for repayment over time. In such a dynamic model, asset transfers would occur when the present value of future benefits from reputation was outweighed by the present value of the potential asset transfer. The simple model applied here is less restrictive than it might first appear, however. It is always possible to view the time $t = 2$ project value after debt repayment as the present value of all future benefits from repayment and to view L as the current value of repudiating those benefits. At first glance, it is difficult to see why the results would not generalize to a more dynamic setting.

enforced and a judgment executed against the realized value V. In other words, at time $t = 1$, while the creditor runs off to court, the debtor has the chance to transfer assets. But if the latter waits until time $t = 2$, the sheriff is at the door, so to speak, and no transfer is possible.

III. DEBT CAPACITY WITHOUT FRAUDULENT CONVEYANCE LAW

Without fraudulent conveyance law, the borrower can loot the assets of the firm, and in some states of the world it will be to his or her advantage to do so. The lender will anticipate when—given a realization of a time $t = 1$ liquidation value and a time $t = 2$ project value—the borrower at time $t = 1$ will choose to transfer assets from the firm at time $t = 1$ or choose to operate the firm to time $t = 2$ and repay the debt. When it is in the borrower's interest to transfer assets at time $t = 1$, the lender knows he or she will receive no repayment. Since there is no fraudulent conveyance law, the lender's only recourse is to the borrower through legal action on the debt contract. However, the borrower will have transferred the assets beyond the reach of any judgment, so the lender's legal action will be worthless to the lender. That is, when the sheriff shows up to levy against the assets at time $t = 2$, there will be no assets to seize in any state of the world where the borrower was better off transferring assets at time $t = 1$. The borrower can therefore only borrow against those states of the world where it will be in his or her interest to operate to time $t = 2$ and repay the debt. The debt capacity of the firm depends on the relative magnitudes of liquidation value at time $t = 1$ and project value at time $t = 2$. Firms expected to be highly liquid at time $t = 1$ relative to their time $t = 2$ project values have very low debt capacity.

To solve for debt capacity in the absence of fraudulent conveyance law, remember that all uncertainty is resolved at time $t = 1$. At time $t = 1$ the borrower and the lender know the price at which the assets of the firm can be sold, L, and the project value, V, that will be realized (with certainty) if the firm is operated to time $t = 2$. The borrower's problem at time $t = 1$, after learning both L and V, is to choose α (the proportion of assets to transfer) to maximize total gain:

$$\max_{\alpha}[\max[(1-\alpha)V - D, 0] + \alpha L]. \tag{1}$$

The borrower maximizes a payoff composed of two parts. The borrower's proceeds from transferring assets at time $t = 1$ are αL since this is what he or she can receive by selling those assets at their current liquidation value. Proceeds from continuing operations are the project value left after debt repayment if that is positive, zero otherwise (since the borrower has no initial wealth and, by assumption, the creditor cannot reach any transferred assets). It is simple to obtain the solution to the borrower's problem as

$$\alpha = \begin{cases} 1 & \text{if } L > V - D \\ 0 & \text{if } L \leq V - D \end{cases}. \tag{2}$$

To see this, note that the linearity requires the solution be either $\alpha = 0$ or $\alpha = 1$. If $\alpha = 0$, the payoff is V − D. If $\alpha = 1$, the payoff is L. Thus $\alpha = 1$ when $V - D < L$, $\alpha = 0$ if $V - D > L$. If at time $t = 1$ the liquidated assets are worth more than any possible residual after debt payment at time $t = 2$, the borrower will transfer everything at time $t = 1$. At time $t = 2$ there will be no assets to pay the debt. The firm will default with the lender left with nothing and the borrower with L. Because the proceeds from the transfer are hidden or protected, there is no way for the lender to seize L to help satisfy a judgment at time $t = 2$. On the other hand, if the liquidation value of the assets at time $t = 1$ is less than the residual income at time $t = 2$, the borrower can do no better than wait until time $t = 2$, pay off the debt from V, and pocket $V - D$.

Knowing the borrower's problem (1) and the optimal solution (2) (that is, when the borrower will loot the firm's assets completely and when the lender will be repaid), the lender will provide financing at time $t = 0$ of at most

$$\max_D E(D) = D \int_{V-L \geq D} dF(L, V). \tag{3}$$

The lender is repaid in any state of the world where $V - D \geq L$, implying for the realization of L and V to be one where the debt is repaid it must be the case that $D \leq V - L$. Choosing D to maximize the expected debt repayment gives the debt capacity of the firm. So long as $\max_D E(D) \geq K$, the borrower can finance the project. Otherwise the project cannot be taken, given the assumption that the manager is wealth constrained. In general, the inability to prevent fraudulent asset transfers will prevent some socially efficient investments from being financed. Indeed, it is obvious that some very good projects—those with both high liquidation values and high going concern values—cannot be financed at all. Equation (3) illustrates the "paradox of liquidity" highlighted by Myers and Rajan (1998). While high liquidation values (L's) relative to going concern values (V's) are typically thought to *increase* debt capacity, this is only true if those liquidation values are not easily transferred by firm insiders. Otherwise, high interim liquidation values make asset transfers more profitable and *decrease* debt capacity. Under the assumptions so far, asset *illiquidity* (low L's relative to V's) is associated with high debt capacity precisely because such assets are not looted profitability by the borrower before the lender can seize the assets. In fact, inspection of (3) reveals that perfect liquidity of assets in place—where liquidation values are always equal to future project values (that is, $L = V$)—forces debt capacity to zero.

IV. DEBT CAPACITY WITH FRAUDULENT CONVEYANCE LAW

The introduction of fraudulent conveyance law dramatically increases debt capacity because it allows the lender to recover fraudulently transferred assets. This allows the borrower to borrow even against the high liquidity states that

previously prevented a credible promise to repay debt. Indeed, by adding an additional assumption that the borrower will liquidate the firm optimally even when the realized liquidation value is less than the debt repayment (by promising the borrower a small payment for doing so), the project can always be financed when it is socially optimal to do so.

Consider a fraudulent conveyance law of the following form, adopted from the provision that appears in the federal bankruptcy laws:[10]

> Fraudulent conveyance law: An asset transfer from the borrower can be recovered from the transferee if the borrower receives less than equivalent value for the transfer and is insolvent after the transfer. A transfer is "equivalent" if it leaves the borrower with the same asset value after the transfer than before it. A borrower is "insolvent" if $(1-\alpha)V < D$, or, if the entire firm is liquidated at time $t=1$, the borrower is insolvent if $(1-\alpha)L < D$.

The fraudulent conveyance law states that the borrower cannot transfer assets from the firm for less than equivalent value if the firm is left insolvent. Any such transfer is legally voidable and the court can force the transferee to return the assets for satisfaction of the debt. The solvency test is that the firm's assets after the borrower's removal of αL must be greater than or equal to D, the present value of debt. The solvency test can be implemented because V, L, and α are each observable at time $t=1$. Therefore, any violation of the fraudulent conveyance law will be detected *ex post* and at time $t=2$ the court will force the transferee to forfeit αL.

This changes the borrowers problem at time $t=1$ after uncertainty about L and V has been resolved. Now the borrower chooses the amount of the firm's assets to transfer subject to the constraint that the firm must be left solvent:

$$\begin{aligned} &\max_{\alpha}[\max[(1-\alpha)V - D, 0] + \alpha L] \\ &\text{subject to } \max[(1-\alpha)V - D, (1-\alpha)L - D] \geq 0. \end{aligned} \tag{4}$$

Note the constraint. The borrower can choose $\alpha > 0$ *only* if the firm is left solvent under the optimal continuation–liquidation decision, that is, only if $\max[(1-\alpha)V - D, (1-\alpha)L - D] \geq 0$. In other words, the borrower can transfer assets at time $t=1$ only if the firm will have assets at time $t=2$ sufficient to satisfy the debt payment D. The borrower may satisfy the constraint in one of two ways. Either leave sufficient *future project value*, $(1-\alpha)V$, to satisfy the debt or leave enough of the *liquidation proceeds*, $(1-\alpha)L$, to satisfy the debt. The solution to the borrower's

[10] 11 U.S.C. Section 548(a)(2)(B)(I) states:

> The trustee may avoid any transfer of an interest in the debtor in property, or any obligation incurred by the debtor, that was made or incurred on or within one year before the date of the filing of the petition, if the debtor voluntarily or involuntarily received less than reasonably equivalent value in exchange for such transfer or obligation; and was insolvent on the date that such transfer was made or such obligation was incurred, or became insolvent as a result of such transfer or obligation.

problem, assuming the constraint is satisfied, is

$$\alpha = \begin{cases} 0 & \text{if } V \geq L \\ 1 - D/L & \text{if } V < L \end{cases}. \tag{5}$$

To see this, note again that the linearity requires either $\alpha = 0$ or $\alpha = 1 - D/L$. If the borrower removes no assets, then $\alpha = 0$ and the payoff is $V - D$. If the borrower removes assets, he or she must leave the firm solvent, implying that he or she can remove at most $\alpha = 1 - D/L$, leaving D/L of the assets for the lender, which satisfies the latter's claim. When the borrower does this, the payoff is $L - D$. Thus, when the borrower faces the fraudulent conveyance law and the firm is solvent, he or she chooses the optimal continuation–liquidation policy as a consequence. This means that as long as the firm is solvent the borrower's incentives assure that given the realized state of the world (L, V), the maximum of the two is available to satisfy the lender's claim. However, when the state of the world leaves the firm insolvent, that is, when after the realization of L and V, $\max[V - D, L - D] < 0$, the borrower has no clear incentive to choose the optimal policy. For present purposes I add the assumption that the borrower always receives at least a trivial fraction of the assets left in the firm before debt repayment at time $t = 2$ in order to induce him or her to liquidate optimally in this scenario.[11]

It follows that fraudulent conveyance law increases debt capacity. Under the fraudulent conveyance law and the added assumption that the borrower chooses optimally when the firm is insolvent under the realized L and V, the borrower always chooses the optimal continuation–liquidation decision. The lender is fully repaid when either $L \geq D$ *or* $V \geq D$. The lender also receives the assets in the firm when the firm is insolvent. This increases debt capacity to

$$\max_D E(D) = D \int_{\max[V,L] \geq D} dF(L, V) + \int_{\max[V,L] < D} \max[V, L]\, dF(L, V). \tag{6}$$

Equation (6) is clearly greater than (3), since the borrower can set $D = \max[\max(V), \max(L)]$, where the maximum is over the entire support of $F(L, V)$. Of course, the borrower need only set D high enough that the project can be funded. Equation (6) says that the lender agrees to promised repayment of D knowing that the debt is fully repaid when $\max[V, L] \geq D$ and repaid to the full extent of $\max[V, L]$ when $\max[V, L] < D$. In fact, as the fraudulent conveyance law leads to the efficient action for any realization of L and V, all positive net present value projects are financed. This is the first-best solution and eliminates the somewhat counterintuitive relation between liquidation value and debt capacity. With fraudulent conveyance law, higher liquidation values, *cetaris paribus*, increase debt capacity.

[11] This is consistent with all earlier assumptions since I do not assume that the borrower derives any private non-monetary benefits by actually operating the firm from time $t = 1$ to time $t = 2$.

Viewing fraudulent conveyance law from the debt capacity perspective sheds light on the way the law is written and applied. Fraudulent conveyance law prohibits asset transfers only in certain states of the world, but these are the states responsible for the inability to finance socially optimal investment. Forbidden by fraudulent conveyance law are transactions that (1) transfer assets, (2) are without reasonably equivalent value, and (3) leave the firm insolvent. Even in the simple model presented here it would be sub-optimal for a non-contractual legal rule to prohibit all asset transfers, that is, to simply forbid (1). Optimal debt capacity requires that the borrower be able to sell the assets in place for the liquidation value when $L > V$. If all asset transfers were prohibited this would not be possible; the borrower could not take advantage of the assets' higher value in another use. Even if the borrower is insolvent, an asset transfer for more than equivalent value (that is, (1) and (3) hold, but not (2)) leaves the lender better off whenever $D > L > V$. Fraudulent conveyance law avoids the need to "over-regulate" the asset sale decisions of the borrower (or, alternatively, leaves these decisions to contractual agreement), while alleviating the contractual incompleteness that diminishes debt capacity.

This perspective is also consistent with the mandatory nature of fraudulent conveyance law and highlights that it exists outside the contract itself. Fraudulent conveyance law is not just a "background rule" supplying at lower cost a term that all debtors and creditors would include in their contracts if they took the time and expense to bargain about it. This is clear for two reasons. First, as Baird and Jackson (1985) point out, contracting parties cannot "opt out" of its requirements. This feature would prove highly peculiar if the law were designed merely to minimize transaction costs. Second, and more importantly, a contractual fraudulent conveyance law would be worthless. Optimal debt capacity and economic efficiency require that the lender be able to unwind any fraudulent transfers in their entirety. This requires an action against the transferee. Damages remedies against the *borrower* are ineffective. Even if the borrower and lender took the time and expense to agree that the borrower would not transfer assets without receiving reasonably equivalent value if this would leave him insolvent, neither party would benefit from this term since its breach would occur only when the borrower found an appropriately protected third party to hold the transferred assets.

V. THE LIMITS OF FRAUDULENT CONVEYANCE LAW

While fraudulent conveyance law plays an important role in increasing debt capacity by overcoming a serious contractual incompleteness in debt contracts, its ability to prevent fraudulent asset transfers rests on three important assumptions. First, it must be possible to identify the asset transfer. In the model, it is assumed that the creditor (and, more importantly, the court) can identify the transfer of αL. In the real world it is clearly easier to identify some transfers than others. For example, transfers of tangible assets (or their sale and transfer of the proceeds) may be easier to spot than transfers of services. While it may be easy to identify the

tranfer of funds from a bank account (especially if the account is held at the lender bank), it may be more difficult to identify the transfer of a technological innovation (for example, new software code) to a company set up by the borrower's insiders. In terms of comparative statics, this suggests that debt capacity will be lower in firms whose assets are easier to transfer without notice.

Second, it must be possible to identify the third-party transferee. In the model, it is assumed that the transferee who takes αL is visible to the court and subject to its jurisdiction. In the real world, numerous problems may arise in identifying the transferee. For example, if transfers are made in small increments to anonymous customers (as might occur, for example, in a restaurant or a bar), it may be virtually impossible to identify the transferees. Even if the asset value is identifiable and the transferee known, a successful transfer to a jurisdiction where the court has no power (for example, to an appropriately protected offshore account), may make it impossible to seize the transfer. Further, courts may be unwilling to hold certain transferees responsible. In closely watched litigation following one leveraged buyout, the court refused to hold that noninsider selling shareholders could be liable for fraudulent conveyances (*Wieboldt Stores, Inc. v. Schottenstein*, 94 B.R. 488 (N.D. Ill. 1988)). In terms of comparative statics, debt capacity will be lower in firms whose potential transferees will be hard to identify or where it will be difficult to convince the court to hold them responsible.

Finally, it must be possible to determine insolvency. In the model, the solvency test is easily implemented because V, L, and α are each observable at time $t = 1$. In the real world, determining solvency is quite difficult and generally involves a messy factual inquiry, complete with expert witnesses on both sides interpreting the same evidence in different ways. There also exists a lack of clear judicial standards for judging insolvency. As Baird (1991) notes, "[b]enchmarks for judging solvency may be hard to come by" in fraudulent conveyance litigation. In the early 1990s' Revco bankruptcy, for example, a court-appointed examiner found it difficult to decide whether a strong case existed against participants in the company's failed leveraged buyout, since it was difficult to reach a clear conclusion on the company's solvency. To the extent that borrowers and lenders believe that solvency will be difficult to determine *ex post*, debt capacity will suffer *ex ante*. This suggests, once again in terms of comparative statics, that firms with easy to value assets and liabilities will have higher debt capacity than firms whose assets and liabilities are more difficult to value.

VI. THE COMPARATIVE ROLE OF SECURED DEBT

The model presented here assumes that without fraudulent conveyance law a borrower's insiders can transfer assets out of the firm, depriving the lender of his or her ability to seize them to pay the debt. This abstracts from the ability of borrowers and lenders to structure their transactions to fall within Article 9 of the Uniform Commercial Code, some version of which has been adopted in all

50 states. Article 9 allows borrowers to grant a "security interest" in their assets which "secures payment or performance of an obligation" (see UCC Section 1-201(37)). A security agreement "is effective according to its terms between the parties, against purchasers of the collateral and against creditors" (see UCC Section 9-201). An Article 9 security interest is thus the product of contractual agreement, but is backed up by statutory law allowing a secured creditor to enforce that security interest against third parties. This statutory law is itself non-contractual. Security interests allow creditors to select particular items of collateral to secure particular debts. In the event of default, the creditor can seize those assets to satisfy the debt. If the debtor attempts to dispose of the assets, the buyer or transferee takes the assets subject to the security interest, and may lose his rights to the prior rights of the lender. By contrast, fraudulent conveyance law gives no lender rights in specific assets, but allows the avoidance of transfers of any assets for less than reasonably equivalent value when the borrower is insolvent after the transfer. While security interests appear primarily designed to allocate rights among creditors (securing priority in selected assets for some creditors against others), fraudulent conveyance law appears to protect unsecured creditors as a whole.

In light of their mutual ability to prevent asset transfers, it is interesting to compare fraudulent conveyance law and security interests. While a detailed comparative analysis of fraudulent conveyance law and secured debt remains for further research, it is clear that secured debt's limits leave an important role for fraudulent conveyance law in increasing debt capacity for borrowers. First, practical difficulties prevent security interests from supplanting fraudulent conveyance law. It is fairly difficult, for example, to take a security interest in all a borrower's assets. Creating secured transactions requires that underlying collateral be described with a fair degree of detail, and some things are excluded from Article 9's coverage altogether. For example, Article 9 generally does not allow security interests to be granted in money or deposit accounts (see UCC Section 9-104). Enforcing a security interest against other secured creditors also requires continual monitoring. If borrowers use the secured transaction mechanism to effect third party transfers (by, for example, granting a security interest to accompany a false debt and then allowing the new "secured creditor" to foreclose on the collateral), then original secured creditors must be constantly vigilant if they are to protect their priority positions.

Second, secured debt contracts are costlier to write than unsecured debt contracts. This is necessarily true since secured debt contracts are just unsecured debt contracts plus a security interest and procedures to perfect that security interest against later lenders. Fraudulent conveyance law protects creditors without requiring them to secure each underlying obligation through Article 9. This may be especially important in facilitating trade credit. This is significant since "[t]rade credit is the single most important source of short-term external finance for firms in the United States" (Petersen and Rajan, 1997). Also, to the extent that there is a role for unsecured debt in a capital structure, fraudulent conveyance law may be the

only legal mechanism that provides strong protection against collusion between the borrower and the secured lender. For example, much fraudulent conveyance litigation that followed 1980's failed leverage buyouts was brought in the interests of unsecured creditors alleging that secured lenders and selling shareholders were the recipients of fraudulent conveyances in the form of security interests and leveraged buyout proceeds.

VII. CONCLUSION

This paper explores how a non-contractual legal rule alleviates a serious contractual incompleteness that exists in debt contracts between borrowers and lenders. The incompleteness addressed is the borrower's ability to fraudulently transfer assets from the firm to deprive the lender of her source of repayment. Fraudulent conveyance law is a non-contractual legal rule that addresses this incompleteness. Fraudulent conveyance law meets the contractual incompleteness head-on, increasing debt capacity by creating a viable, non-contractual remedy against fraudulent asset transfers. The benefits of this rule fall primarily on firms whose assets have high liquidation values. If a borrower can fraudulently transfer assets and sell them for their current liquidation values, then high liquidation values make fraudulent asset transfers more attractive. By helping to solve this problem, fraudulent conveyance law lays the legal foundation necessary to support the standard economic insight that high liquidation value implies high debt capacity.

Fraudulent conveyance law's ability to prevent fraudulent asset transfers is subject to at least three important limits. First, it may not always be possible to identify the asset transfer. This suggests that debt capacity will be lower in firms whose assets are easier to transfer without notice. Second, it may not always be possible to identify or hold ultimately liable the third-party transferee. Debt capacity will be lower in firms whose potential transferees will be hard to identify or where it will be difficult to convince the court to hold them responsible. Finally, it may not always be possible to determine insolvency unambiguously. This suggests that firms with easy-to-value assets and liabilities will have higher debt capacity than firms whose assets and liabilities are more difficult to value. Fraudulent conveyance law is also not the only non-contractual legal rule preventing fraudulent asset transfers. Borrowers and lenders can also structure their transactions to fall within Article 9 of the Uniform Commercial Code, creating secured debt. It is clear, however, that secured debt's limits leave an important and separate role for fraudulent conveyance law in increasing debt capacity for borrowers.

Future work on financial contracting might benefit from further study of the role non-contractual legal rules play. For example, corporation law itself is non-contractual. A more general theory that provided a framework for understanding the importance of non-contractual rules in building corporate organizations would surely be of great interest.

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