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THE CASE FOR A MANAGERIAL DUTY TO ENSURE ADEQUATE CORPORATE CAPITALIZATION

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Abstract

The corporate tort problem was cited in recent literature as a reason for abolishing the limited liability of shareholders for corporate debts. This paper suggests dealing with this problem by imposing a duty on corporate managers to ensure that corporations managed by them are adequately capitalized to cope with their expected tort liabilities. The paper describes how such a duty would operate and compares it to several other possible rules such as unlimited shareholder liability for corporate debts and minimum capital requirements.

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I. INTRODUCTION

A debtor's wealth places an upper limit on the ability of his creditors to collect on their debts.[1] The wealth of individuals for the purpose of debt collection is mandatorily set at almost all of their assets.[2] Limited liability effectively allows corporations to set their wealth as they wish.[3] Shareholders are thus induced to create under-capitalized and over-leveraged corporate entities[4] which are judgment proof in relation to potential tort liability.[5] Such under-capitalized corporations tend to engage in hazardous activities without taking proper care, because they do not fully internalize the expected cost of harm they may cause.[6] This drawback of limited liability, which is sometimes referred to in the

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1. The wealth constraint of individuals is determined by their ability to accumulate assets and by gifts they receive from other people. Their ability to legally tamper with their wealth constraint without actually reducing their wealth is quite limited.

2. For the effect of wealth constraint on response of individuals to incentives set by rules see: Shavell, The Judgment Proof Problem, 6 Int. Rev. Of Law and Econ. 45 (1986).

3. The essay deals specifically with corporations because the recent literature referred to below also talks about corporations. The reason for this is presumably that the corporate form is the most common form. However, the analysis is applicable to all types of firms whose equity stakeholders are afforded limited liability, such as limited partnerships.

4. See for example: Hansman & Kraakman, Towards Unlimited Shareholder Liability for Corporate Torts, 100 Yale L. J. 1879, 1882-4 (1991); For empirical evidence regarding the tendency to divide hazardous activities among many small entities see: Ringleb & Wiggins, Liability and Large - Scale, Long Term Hazards, 98 J. Pol. Econ. 574 (1990).

5. The focus on tort creditors follows the literature which concentrates on such creditors. However, the analysis may be extended to all 'involuntary' creditors of the firm.

6. Hansman & Kraakman, supra; See also Possey, Limited liability and incentives when firms can inflict damages greater than net worth 13 Int. Rev. of Law & Econ. 325 (1993); Cataldo, Limited Liability with One-Man Companies and Subsidiary Corporations 18 Law & Contemp. Probl. 473 (1953); Roe, Corporate Strategic Reaction to Mass Tort, 72 Va. L. Rev. 1, 40-2 (1991); Stone, The Place of Enterprise Liability in the control of corporate Conduct, 90 Yale

Continues...

literature as the 'corporate tort problem' led Professors Hansman and Kraakman to suggest abolishing it entirely.[7] Unlimited liability means that the wealth of corporations is mandatorily set at the aggregate of all assets of all shareholders.[8]

The limited liability corporate form has been a most effective tool for the collective collection and deployment of capital for many years. Introduction of unlimited liability constitutes a very radical reform of this form. It is hard to predict what effect such a reform would have on the way corporations organize and behave, on domestic and international capital markets, and ultimately on the real economy. Successful implementation of unlimited liability requires a high degree of international coordination and cooperation. Absent such coordination corporations will simply reincorporate in

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L.J. 1, 68-70 (1980); Schwartz, Product Liability, Corporate Restructure, and Bankruptcy: Toxic Substances and the Remote Risk Relationship, 14 J. Leg. Stud. 689, 714-5 (1985). For the effect of wealth constraint on tot incentives in general see Shavell, supra note 2.

7. Hansman & Kraakman, supra note 4; Hansman & Kraakman, Do The Capital Markets Compel Limited Liability - A Response to Professor Grundfest, 102 Yale L. J. 427 (1992); . Hansman & Kraakman, A procedural focus on unlimited shareholder liability 106 Harv. L. Rev. 446 (1992). Other commentators suggested revising limited liability or limiting its applicability in various ways in light of the corporate tort problem. See for example Halpern, Trebilcock & Turnbull, An Economic Analysis of Limited Liability in Corporation Law 30 U. Toronto L. Rev. 117, 149 [close corporations]; Note, Should Shareholders be Personally Liable for the Torts of their Corporations?, 76 Yale L.J. 1190 (1967) [close corporations]; P. Blumberg, The Law of Corporate Groups: Substantive Law 681 (1987) [corporate groups]; Leebron, Limited Liability, Tort Victims, and Creditors 91 Colum. L. Rev. 1565, 1632 (1991); Landers, A Unified Approach To Parent, Subsidiary, and Affiliate Questions in Bankruptcy, 42 U. Chi. L. Rev. 589 (1975); Posner, The Rights of Creditors of Affiliated Corporations 43 U. Chi. L. Rev. 199 (1976) Landers, Another Word on Parents, Subsidiaries and Affiliates in Bankruptcy 43 U. Chi L. Rev. 527 (1976) [corporate groups]; Stone, supra note 6 at, 65-70 (1980).

8. Some versions of the rule extend the liability of each shareholder only to a fraction of corporate liabilities by not requiring wealthy shareholders to pay for judgment proof shareholders, thereby resulting in setting a somewhat lower constraint.

jurisdictions which will continue to offer limited liability.[9] Given the lucrative nature of the business of incorporation and the positive economic spilovers it creates, it is safe to assume that some jurisdictions will continue to offer limited liability incorporation in order to attract corporations. Preventing access to domestic markets from corporations incorporated in such jurisdictions, if at all feasible, will necessitate the implementation of a wide array of regulatory restrictions on international capital flows, trade and cross-border ownership. In addition to the direct costs of implementation, administration, enforcement[10] and compliance costs created by such a network of domestic and international regulation it is certain to introduce significant inefficiencies into international economic flows. The costs associated with the implementation and administration of tradable and liquid markets for unlimited liability equity stakes are also very high. Furthermore, Professor Grundfest showed that even once implemented the effectiveness of unlimited liability in getting publicly held corporations to internalize expected tort harm they cause is quite doubtful for several reasons, the most important of which is that capital markets are likely to react to such a rule by various strategies such as shifting equity stakes to judgment proof

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9. For a detailed discussion of these flaws of the unlimited liability rule see: Grundfest, The limited Future of Unlimited Liability: A Capital Markets Perspective, 102 Yale L. J. 387, 410-6 (1992); see also Hansman & Kraakman, A procedural focus on unlimited shareholder liability, supra note 7. For additional criticism of unlimited liability see Thompson, Unpacking Limited Liability: Direct and Vicarious Liability of Corporate Participants for the Torts of the Enterprise, 47 Vand. L. Rev. 1 (1994).

10. For a discussion of procedural difficulties related to enforcement of an unlimited liability rule see: Alexander, Unlimited shareholder liability through a procedural lens 106 Harv. L. Rev. 387 (1992); Hansman & Kraakman, A procedural focus on unlimited shareholder liability, supra note 7.

holders thereby negating its intended effect.[11] All this suggests that it is highly unlikely that unlimited liability will be adopted in any jurisdiction anytime soon.

This essay offers to address the corporate tort problem by imposing a duty on corporate managers to see to it that corporations they manage are adequately capitalized (to be referred to as the 'duty to capitalize'). The possibility of using executive liability as a means of controlling corporate conduct in general as well as a partial solution of various aspects of the corporate tort problem had been raised by several commentators.[12] Grundfest, for example, viewed 'gatekeeper' liability as standing a better chance of success than unlimited liability because financial markets cannot negate its effect.[13] Leebron[14] suggested holding managers and shareholders of close corporations, but not publicly held corporations,[15] liable for failure to adequately insure against foreseeable corporate tort liabilities whenever a reasonably priced insurance is available, as part of a general scheme

11. Grundfest, Supra at 392-415.

12. For a general discussion of managerial liability as a means of controlling corporate behavior see: Kraakman, Gatekeepers: The Anatomy of a Third party Enforcement Strategy 2 J. L. Econ. & Org. 53 (1986); Kraakman, Corporate Liability Strategies and the Costs of Legal Controls 93 Yale L. J. 857 (1984).

13. Grundfest, supra note 9 at 422-3. See also Alexander, supra note 10, at 434.

14. Leebron, supra note 7 at 1565, 1632-6 (1991).

15. Leebron, supra note 7 at note 213. He does not propose to extend liability for failure to insure to publicly held corporations because (1) officers are adequately induced to obtain insurance because they fear the risk of bankruptcy and losing their jobs, and (2) managers have few assets in comparison to the assets of the corporation. The first reason is tantamount to saying that the corporate tort problem does not exist for public corporations, for the incentive to under-insure is not different from the incentive not to obtain additional equity or to increase the over-all risk associated with the corporation's business. The corporate tort problem exists only because of the possibility that a corporation may become insolvent. The issue of judgment proof managers is discussed in detail in section II(G) below.

which includes partial application of unlimited liability.[16] On the other hand, Halpern, Trebilcock & Turnbull mention the possibility of holding directors of publicly held corporations personally liable to tort creditors.[17]

The purpose of this essay is to demonstrate that residual executive liability is a feasible and a relatively cost effective solution to the corporate tort problem which is applicable to both closely held and publicly held corporations.

The basic premise of the duty to capitalize is that managers are burdened with a duty to see to it that corporations they manage have sufficient capital to pay for their tort liabilities. Managers are prompted to cause the corporation they manage to expose additional assets to potential tort liabilities by being held accountable when the corporation commits torts for which it cannot pay if the capitalization of the corporation is found to have been inadequate in light of its activities. For the purpose of the duty corporate 'Capital' is measured from the perspectives of tort victims. It includes all corporate assets which are available for payment for tort liabilities. The duty does not specify how the corporation is to increase its capitalization. It may obtain access to additional assets by issuing equity or contractual debt which is subordinated to tort claims or by obtaining liability insurance. Presumably, it will choose the least costly combination of sources. One of the main advantages of the duty to capitalize lies in this flexibility. The duty assures that the corporation will respond adequately to the incentive structure set by the tort system

16. As Hansman & Kraakman, supra note 4 at 1929, noted this scheme presents only a partial solution because in many cases insurance may not be available, may be too costly, and may result in over-insurance as well as other moral hazard problems.

17. Halpern, Trebilcock & Turnbull, An Economic Analysis of Limited Liability in Corporation Law 30 U. Toronto L. Rev. 117, 149 (1980).

while keeping the restrictive regulatory impact to a minimum. In designing its capital structure the corporation can but is not obliged to mimic unlimited liability or any of the other rules offered as mandatory solutions to the corporate tort problem. While unlimited liability amounts to a mandatory requirement that shareholders finance the residual tort liabilities of the corporation, the duty to capitalize induces the corporation to choose the best source of financing available. Shareholders will be called to finance corporate tort liabilities only if they are the cheapest providers of such financing.

The essay deals primarily with the corporate tort problem. It is not intended to be a general defense of the doctrine of limited liability.[18] It does however indirectly support the case for limited liability by showing that abolishing it is neither necessary nor the best way to solve the corporate tort problem.

The first part outlines in detail the operation of the duty to capitalize in both publicly held and close corporation settings. The second part describes placement of the duty within the legal system as well as in relation to the tort liability of the corporation and tort agency norms which render corporate actors liable together with the corporation. The third part compares the duty with other attempts to deal with the corporate tort problem -

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18. For discussion of limited liability in general see Richard Posner, An Economic Analysis of Law §14.3 (3rd ed., 1986); Frank H. Easterbrook & Daniel R. Fischel, The Economic Structure of Corporate Law, P. 40-63 (1991); Halpern, Trebilcock & Turnbull, supra note 12; Leebron supra note 7; Woodward, Limited Liability in the Theory of the Firm, 141 J. Instit. & Theo. Econ. 601 (1985); Ribstein, Limited Liability and Theories of the Corporation 50 Maryland L. Rev. 80 (1991); Meiners, Mofsky & Tollison, Piercing the Veil of Limited Liability, 4 Del. J. Corporation. L. 351 (1979); Arrow, Essays in the Theory of Risk-Bearing 140 (1971); Dodd, The Evolution of Limited Liability in American Industry: Massachusetts, 61 Harv. L. Rev. 1351 (1948); Blumberg supra note 7; Manne, Our Two corporation Systems: Law and Economics, 53 Va. L. Rev. 259 (1967); Dent, Limited Liability in Environmental Law, 26 Wake Forest L. Rev. 151 (1991).

unlimited liability, granting tort creditors seniority in bankruptcy, pierce of corporate veil, and minimum capital requirements.

II. THE DUTY TO CAPITALIZE

This part describes the operation of duty to capitalize and discusses the appropriate standard of liability to be employed. This standard is defined as the amount of assets which the corporation is required to maintain in order to absolve managers from liability given its activities. The higher the standard the more capital the corporation will be required to keep in order for managers to comply with the duty. To illustrate the effect of the duty two points on the possible spectrum of standards will be examined. The first is an extreme or 'strict' standard which requires that manages see to it that the corporation will be able to satisfy all its tort debts. This standard, which is clearly too extreme to be seriously considered, is used primarily to demonstrate the basic operation of the duty under simplifying assumptions. The second standard is a more lenient or 'negligence type' standard which requires that managers see to it that the corporation will be able to cover foreseeable tort obligations.

The first section contains a numerical formulation of the corporate tort problem which demonstrates how this problem affects safety investment decisions. This example is used throughout this part to demonstrate the effect of the duty to capitalize. The operation of the 'strict' and the 'lenient' standards are described in the next two sections. The following sections deal with the costs of maintaining the excessive capital obtained to finance tort liabilities which is not otherwise needed to finance corporate activities; the effect of managerial risk aversion; the relatively low wealth of managers and attachment issues. The last section extends the analysis to close corporations.

A. A NUMERICAL FORMULATION OF THE CORPORATE TORT PROBLEM

X Inc Is a corporation engaged in a risky activity, such as transportation of hazardous materials. It has assets of 2,200 and no debt. Each of the one hundred equal shareholders of X Inc have in addition to their shares assets worth 5,000. The assets of each of the two managers of X Inc who may or may not be also shareholders are worth 5,000. Both shareholders and managers are assumed to be risk neutral in respect of all profits as well as losses not exceeding 2,500, and risk averse in respect of higher losses.[19] The power to direct X Inc's affairs lies only with managers. The only way shareholders can affect the managerial decision making process is by designing their compensation package in a way which will induce them to make the decisions shareholders wish them to take.

The activities of X Inc may cause an accident giving rise to tort liability of 20,000 (the tort committed by the corporation and the liability arising from it will be referred to as the 'primary' tort and 'primary' liability). If X Inc decides to invest 1,000 in safety measures, the probability of the accident occurring is expected to be 10%. Otherwise the probability will rise to 20%.

Assuming that the tort rule under which liability arises is optimal,[20] it is socially desirable for X Inc to invest in the safety measures. This investment costs 1,000 and saves

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19. Compare: Rose-Ackerman, Risk Taking and Ruin: Bankruptcy and Investment Choice, 20 J. Leg. Stud. 277 (1991).

20. For a general discussion of the incentive effects of tort rules see Steven Shavell, Economic Analysis of Accident Law (1987).

2,000 in expected damages.[21] If the business was owned directly by shareholders they would have made this socially desirable investment. X Inc will decide differently though, because under limited liability shareholders' losses are limited to the 2,200 they invested in it. They are indifferent with respect to losses above this amount. The portion of expected savings which will accrue to shareholders is only 220[22] which is lower than the 1,000 needed to be spent on safety in order to obtain the reduction in the probability of an accident.[23] The expected social loss resulting from this choice is 1,000.[24]

Shareholders can use limited liability incorporation to artificially divide their hazardous activities among many under capitalized corporate entities similar to X Inc.[25] In this manner they are able to avoid a significant portion of the cost of harm caused by their activities which otherwise would have been imposed on them by the tort system. Similar incentives apply with respect to the amount of capital invested in any particular corporation. For any given corporation conducting any given activity shareholders are induced to reduce the amount of capital available for tort victim collection by financing

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21. Generally, if the damage caused is D, the probability of the damage occurring is Pl if a safety investment of S is made and Ph if the no safety investment made, than it is socially optimal for the investment in safety to be made as long as $(P_h - P_l)*D > S$ (i.e. the expected savings are higher than the cost).

22. The probability that they will lose their entire investment of 2,200 declines by 10%.

23. Continuing with the general illustration if the assets of the corporation (assuming no debt) are worth C, than in any case where $D > C$ the corporation will make the investment only if $(P_h - P_l)*C > S$. The general decision rule is $(P_h - P_l)*MIN(C, D) > S$.

24. $(P_h - P_l)*D - S$ and in this case (20%-10%)*20,000 - 1,000.

25. See also Hansman & Kraakman, supra note 4 at 1881; Ringleb & Wiggins, supra note 4.

such corporation with capital required for conducting corporate operations in a manner which excludes such capital from the reach of corporate creditors.[26]

B. OPERATION OF THE STRICT STANDARD

Under the 'strict' standard corporate adequate capitalization is set at a level which will suffice to pay for all corporate tort debts. Determination of managerial liability under this standard is fairly straight forward for as a matter of definition the fact that the corporation cannot pay on a particular tort debt means that it was not adequately capitalized. Managers will always be liable for the full unsatisfied portion of tort damages caused by the corporation.

Continuing with the numerical exposition described in the previous section, if the accident will happen and the safety investment was not made the unsatisfied portion of the damage for which the two managers will be liable will be 17,800.[27] If the safety investment was made the unsatisfied portion of the damage will rise by the cost of the safety investment which is paid out of corporate assets to 18,800.[28] However, due to the reduction in the probability of the accident occurring if the safety investment is made, the

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26. See also Leebron, supra note 7 at 1639-40 [issuance of debt]; Grundfest, supra note 9 at 405-10 [issuance of debt, options and other hybrid synthetic securities].

27. 20,000 - 2,200. The unsatisfied portion of the damage equals to the cost of damages less the amount of equity.

28. 20,000 - (2,200 + 1,000). The unsatisfied portion of the damage equals now to the cost of damages less the amount of equity and the cost of the safety investment.

expected value of this liability is 3,560 if X Inc will not invest in safety[29] and only 1,880 if it will.[30]

In acting for their firm, managers will now take their new liability into account. The problem at this point is that managers are prompted to invest too much in safety[31] because on one hand due to the residual nature of their liability they benefit in full from the savings created by the safety investment but on the other hand they do not bear the full costs of the safety investment. Thus, X Inc's managers will continue to make the safety investment even if it costs 2,100 despite the fact that the investment is not socially desirable anymore[32] for such investment reduces their expected liability by 1,570[33] The costs of this inefficient safety investment are borne primarily by shareholders, because it reduces the value of the corporation by 1,670.[34]

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29. 20% * (20,000 - (2,200 +0)).

30. 10% * (20,000 - (2,200 +1,000)).

31. In the general illustration, managers will cause the corporation to make the safety investment if $P_h*(D-C)-P_l*(D+S-C)>0$. As long as C is relatively small with respect to D, in all situations where it is optimal for the safety investment to be made this decision rule is also satisfied, but the opposite is not true. There are cases where the social rule points to not making the investment, but managers will still make it.

32. The investment now creates a loss of 100 (2,000-2,100).

33. The investment costs now 2,100 but will still save an expected 2,000 of damage. Managers, however are better off making the investment because it reduced their expected liability from 3,560 if no investment is made to 1,990 if the investment will be made 10% * (20,000 + 2,200 - 2,100).

34. If no investment will be made the value of the corporation is 1,760 (2,200 less the expected liability costs which are 20% * 2,200=440). If the investment will be made the value of the corporation drops to 90 because 2,100 of the 2,200 are spent immediately on safety and the expected liability of the corporation is now 10 (10%*100).

A normal bargaining process between shareholders and managers would have led to having the corporation making socially optimal safety investments decision. This result would have obtained because as a matter of definition the aggregate of the expected liability costs actually born by the corporation and the residual liability imposed on managers is equal to the total expected liability imposed on the corporation by the tort system.[35] Managers and shareholders are always aggregately better off by agreeing that managers will cause the corporation to make only optimal safety investments and negotiating over the division of the gain.[36] It will never be worthwhile for shareholders to try to induce managers to cause the corporation to reduce its investment in safety to the sub-optimal levels which existed prior to imposition of the duty to capitalize for in order to achieve this they will always have to pay managers an amount higher then the cost of the safety investment. To the extent that shareholders do control managerial behavior, they will therefore cause managers to reduce the safety investment to optimal levels, but not below such levels.

In practice, however, shareholders and managers of public corporations will find it impossible to negotiate over specific safety measures. Shareholders cannot monitor and observe the daily managerial decision making process. Even if shareholders will pay managers to avoid excessive safety investments, it will be impossible for them to observe and verify that managers complied. Managers will therefore pocket any additional payments made to them and continue to direct the firm to over-invest in safety.

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35. $(P_h - P_l) * (D - C) + (P_h - P_l) * C = (P_h - P_l) * D$

36. In X Inc's example the gain to be divided is 100.

Obtaining full liability insurance coverage for managers against their liability under the duty to capitalize and tying their compensation to the overall value of the corporation will work better than paying them directly. The reason for this is that the proceeds of such insurance are available to managers only for payment on their liability under the duty to capitalize. Full insurance coverage directly reduces the expected liability of managers under the duty to capitalize to zero without affecting their wealth in any other way. The insurance premium which is paid by the corporation reduces its value. The premium depends on the expected unsatisfied portion of tort damages. Absent monitoring and administrative costs, the aggregate of the premium and the expected liability of the corporation is equal to the cost of tort damages imposed by the tort system on the corporation. In attempting to maximize corporate value managers will therefore take into account the full liability costs imposed on the corporation by the tort system. The availability of insurance as well as its effectiveness in preventing excessive care depend of course on the ability of the insurer to monitor managers' actions.

So far, the effect of the duty to capitalize was demonstrated by keeping the capitalization levels of the corporation constant. However, shareholders can also eliminate managers' tendency to take too much care by increasing the amount of corporate assets available for tort victim collection to a level high enough that managers will perceive their expected liability to be zero. The level of capitalization that the corporation needs to maintain in order to dissuade managers from taking any personal liability into account should be high enough to enable the corporation to pay for all tort damages caused by its activities.

The difference between compensating managers for shouldering their liability under the duty to capitalize and increasing the amount of corporate assets is that in the latter case no special monitoring is required to cause managers to respond to the reduction in liability. It is enough to tie managers' compensation to the value of the corporation, and to make the expected liability under the duty to capitalize so small that managers will respond to the first rather to the second.

C. OPERATION OF THE LENIENT STANDARD

Under the lenient standard adequate capitalization is set at a level which will allow the corporation to pay for all foreseeable tort damages. This standard is a negligence type rule.[37] As in any negligence based rule, liability arises only when an actor failed to take appropriate care to prevent a certain protected interest from being harmed. In the context of the duty to capitalize the protected interest is the ability of the corporation to pay its tort debts. 'Care' translates to the asset cushion that the corporation had access to at the relevant times. Managers will be liable for the unsatisfied residual of corporate tort debts only if the amount of capital raised and maintained by the corporation they managed was below the 'due' or 'adequate' capitalization level.

Enforcement of the lenient standard is more complicated then the strict standard. Under the latter the only issues needed to be determined in order to establish liability are the identity of managers and the fact that the corporation cannot pay its tort creditors. Enforcement of a the lenient standard requires three additional judicial determinations. The court must first determine the actual capitalization level of the corporation at the time the tort occurred. Next, the court needs to determine what was the level of 'due' or 'adequate'

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37. Strictly speaking the duty to capitalize is not a necessarily a negligence rule but a negligence type rule, for as explained below the duty can be characterized as either a tort rule or as a corporate law rule. See below page 45 section III(A).

capitalization level for a corporation such as the one at issue. Finally, the results of the first two determinations are compared. Managers will be liable only if actual capitalization turns out to be lower than adequate capitalization. As in any negligence based rule, the effectiveness of the lenient standard is primarily a function of the quality these judicial determinations as well as the costs associated with erroneous determinations.[38]

1. Actual Capitalization

The actual amount of assets that the corporation had access to at the relevant times can be easily determined from corporate accounts and documents. The likelihood of judicial errors in making this determination is very low.

The actual capitalization of the corporation for the purpose of the duty to capitalize should be measured from the perspective of tort claimants. It should include only corporate assets from which tort claims can be satisfied. Following is a brief description of the possible sources for such assets and the choice between them.

a) Equity

Assets available for tort creditor collection can be obtained by issuance of paid or unpaid equity. Unpaid equity offers two cash flow advantages as a source of financing for tort liability financing. Unlike debt or insurance, it does not require a constant payout of

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38. See: S. Shavell, supra note 20.

cash by way of interest or premium. Also, the corporation is not required to maintain unnecessarily high levels of cash before the time the liability actually materializes.

b) Debt

Debt can be contractually subordinated to tort claims. Issuance of such subordinated debt increases the pool of assets available for tort claimants by the total amount issued. Issuance of debt at par with tort creditors increases the pool of assets available for tort claimants by a fraction of the amount issued. This fraction depends on the amount of debt relative to the amount of tort debts.[39] For example, X Inc's original actual capitalization after making the investment in safety is 200. If it issues 10,000 worth of debt subordinated to tort claims its actual capitalization will rise to 10,200.[40] if the debt is were at par with tort claims the actual capitalization will rise only to 6,800.[41]

c) Liability Insurance

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39. If A is the amount of assets of an insolvent corporation, and T is tort liability, than issuance of new debt at par with T, denoted as Dp will increase the assets available for tort creditor collection by $\frac{T}{(T+Dp)}(A+Dp)-A$. The expected liability of managers will decrease by this amount multiplied by the probability of tort occurring.

40. Comprising of 2,200 of assets less the cost of the safety measure and 10,000 of debt.

41. Comprising of 2,200 of assets less the cost of the safety measure (2,000) and increased by $\frac{20,000}{30,000}(10,000+200)-200$.

The third source of assets the corporation can draw upon is primary liability insurance. To be sure this insurance is entirely different from the insurance managers may take out against their own liability under the duty to capitalize. The primary insurance coverage is tied to specific torts committed by the corporation. Like unpaid equity liability insurance does not increase the cash levels of the corporation before tort claims are actually needed to be paid. Unlike equity the assets of the insurer can be accessed only to pay for the specific tort claims against which insurance was taken. Other creditors, including tort creditors, do not share in the proceeds of the insurance. The value of the insurance is not subjected to the business risk of the corporation. Like debt however, insurance requires a constant cash payout of premiums.

Primary insurance coverage changes expected managerial liability under the strict duty to capitalize in two ways. The insurance premium is taken out of the general corporate asset pool. As a result if the covered tort does not occur but an uncovered tort does occur managerial liability will actually rise by the amount of the premium. On the other hand, if a covered tort occurred, there will be no managerial liability at all as long as the coverage will suffice to pay for the claim in full. For example, assume that X Inc's equity is 1,000 and no debt is issued. Its activities may cause two different and unrelated accidents instead of one. The probability of each occurring is 10% and the damage caused is 10,000. Liability for each of the accidents is based on a different tort. Insurance coverage may be obtained for each accident separately. The insurer charges administrative costs equal to 20% of the expected liability covered. If no insurance is taken, total managerial liability under the duty to capitalize is 19,000 if both torts occur and 9,000 if only one tort occurs. The corporation now decides to insure only against accident A. If only accident A occurs there will be no managerial liability at all because the tort claim will be paid in full by the insurance. If only tort B occurs, managerial liability will actually rise by the premium amount of 1,200[42] which was paid to the insurer and is no more available to satisfy tort B creditors to 10,200. If both torts occur the total liability of managers will be reduced by 8,800 which is equal to the amount covered less the premium paid.

Liability insurance resembles somewhat secured debt financing. It increases the total pool of assets by the amount of insurance coverage, but the assets provided by the insurer are secured to the beneficiaries of such insurance. Other corporate claimants benefit from this financing only indirectly, because the claims of the creditors who are eligible to be compensated by the insurer no longer have to be satisfied from the general pool.

d) The Choice Between the Sources

The choice of sources of assets to be made available for tort victim collection is a standard capital structure decision which is aimed at minimizing the cost of the capital obtained and maximizing total corporate value. Taxes aside, the cost of capital depends primarily on three factors - attitude towards risk of the provider of capital, the ability of the provider of capital to monitor corporate activities and the cash flow needs of the corporation. Obviously, capital obtained from risk neutral providers such as banks, public bondholders or insurers will be cheaper from capital obtained from risk averse providers, such as employees or managers. Thus, it is highly unlikely that the corporation will choose to subordinate debts owed to employees or managers to tort claimants. The second factor affecting the cost of capital provided by risk neutral providers is their ability to monitor

42. Consisting of 1,000 of expected liability and 200 administrative costs.

corporate activities in order to prevent agency costs and moral hazard problems. To the extent that the actions of the corporation are observable to insurers, banks or public bondholders the choice between them will depend on their ability to monitor corporate activities efficiently. The main difference between insurers and other providers of capital is that the monitoring costs incurred by insurers can be directly attributable to the tortuous aspects of corporate activities as the capital they undertake to provide is tied solely to tort liability and is not affected by other business risks.[43] Finally, the different sources are characterized by different cash flow features. Keeping high levels of excess cash within a business is costly and may cause organizational and agency problems by cushioning the corporation from competitive pressures.[44] The mix of assets the corporation will obtain will be designed to minimize these effects.

The main difference between the strict standard and the lenient type standard in this respect is that under the strict standard the assets of managers as well as the liability insurance managers will obtain against their potential liability always become a part of the asset pool from which tort creditors can be paid. However, under the lenient standard managers and their insurers will be liable only if the amount of assets that the corporation obtained access to from the first three sources is judged to be inadequate. From a compensatory point of view these assets may be added to the pool when the duty is

43. See also Hansman & Kraakman, supra note 4 at 1906 [it is possible that the monitoring will be collectivized]; Halpern, Trebilcock & Turnball, supra note 12 at 138-42. For a discussion of general corporate monitoring by insurers see Holderness, Liability Insurers as Corporate Monitors, 10 Int. Rev. of Law and Econ. 115 (1990).

44. This cost of excessive capitalization is discussed in detail later in this part. See below section IID.

breached but they are irrelevant for the purpose of determining what was the actual capitalization level of the corporation.

Some of the considerations regarding the mix of sources of corporate assets are different under the lenient standard from the strict standard. Primarily, the corporation will probably obtain much more secondary insurance coverage for its managers under the lenient than under the strict standard. The reason for this is that the expected liability of the secondary insurer is lower than that of the other providers of capital. In choosing to issue unpaid or unlimited equity or debt which is junior to tort creditors the corporation opts in effect to switch from the lenient standard to strict liability for the portion of damages to be paid out of these sources, or in the case of unlimited equity - the entire damages. Insurance on the other hand only shifts the expected costs of the liability under the lenient standard to the insurer. Equity or subordinated will be available to pay for all types of corporate debts, including any tort debts, while the insurance taken out for managers will be drawn upon only to satisfy tort debts and only if the court finds that the corporation failed to maintain adequate capitalization levels. For example, Y Inc's activities are expected to cause 20,000 worth of tort damages with a probability of 90% and 30,000 with a probability of 10%. It is equally probable that the court will set adequate capitalization at 20,000 or 30,000. If Y Inc will maintain equity or subordinated debt of 20,000 and obtain for managers secondary insurance against their potential liability of 10,000 then the expected liability cost of the insurer which is a function of both the probability of the higher damage occurring and the probability that adequate capitalization will be set at the higher level will be 500.[45] If, however Y Inc decides to increase its equity

45. 10,000*10%*50%

to 30,000 instead of obtaining secondary insurance the expected liability incurred by the providers of the additional 10,000 of equity is 1,000.[46] The determination of adequate capitalization is irrelevant as long the damages are equal or lower than the amount of equity. The monitoring and administrative costs of insurance need to be extremely high in order to offset this difference.

2. Adequate Capitalization

The adequate level of capitalization should be set based on the probability of torts occurring given the type of activities the corporation engages in. The riskier corporate activities are, the higher adequate capitalization should be set at. Adequate capitalization is the level of capitalization which is sufficient to cover all foreseeable damages arising of all foreseeable torts that the corporation may commit in conducting its activities.[47] This general test will be applied to specific torts committed by the corporation for which it is not able pay.

The determination of adequate capitalization need not be general. It is enough for the court to judge the actual torts committed by the corporation and the damages which actually resulted from such torts to be foreseeable. To determine adequate capitalization the court needs therefore to estimate the probability of occurrence of a tort of the type which was actually committed by the corporation given its activities as well as the

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46. 10,000*10%

47. Compare: Schwartz, supra note 6 at 716 ['knowable tort risks']; Clark, Duties of the Corporate Debtor to its Creditors, 90 Harv. L. Rev. 505, 545 (1977) [adequate capitalization in the context of corporate veil piercing]; Leebron, supra note 7 at 1634-5

probable damages arising of such torts. If more than one tort was committed by the corporation the court must estimate the probability and costs of each of these torts as well as the probability of all of these torts being committed by the same corporation. Adequate capitalization should allow the corporation to pay for all foreseeable damages arising out of all foreseeable torts. [48] Assume, for example, that Y Inc's activities caused three different torts giving rise to 400 worth of damages. If all torts and all damages are foreseeable, adequate capitalization will be set at 1200. If only two of the torts are foreseeable or if it is foreseeable only that two of the torts will be committed by the same corporation adequate capitalization will be set at 800. If all torts are foreseeable, but the foreseeable level of damages for each tort is only 300 adequate capitalization will be set at 900 and so forth.

There are several sources of information which may assist the court in making a reasonably accurate determination of adequate capitalization. First, the court will have access to much evidence regarding what the managers of the corporation at issue actually foresaw. Such evidence will probably arise in abundance from corporate documentation and internal discussions regarding the response of the corporation to the duty to capitalize, as well as from information furnished to providers of capital such as junior creditors, primary liability insurers and insurers of managers' liability under the duty to capitalize. Second, the court will have access to data regarding what other corporations in the same industry and their insurers actually foresaw. Once the duty is enacted, corporations will alter their capital structure to accommodate for the new liability. In all likelihood, it will

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48. Example of an unforeseeable event is that all corporate assets are destroyed by a storm and the next day a tort occurs. See also Kraakman & Hansman, supra note 4 at 1917- such losses will be borne by the victims and not by the corporation- they are too remote.

take several years until the first judicial determination will be made. During this period corporations will not rationally assume any judicial bias or error. Their best course of action will be to try and anticipate in truth the correct levels of capital required and act accordingly.[49] By the time the court will be called to make a determination of adequate capitalization it should have available to it an abundance of information regarding the market's estimation of the capitalization required under the new rule. As capitalization levels are readily comparable between firms, this information should provide an important benchmark for determining adequate capitalization. Finally, corporations should anticipate almost all of the accidents which may arise from their activities. Thus, in almost all cases the fact that a tort was committed should mean that it was foreseeable and that the corporation should be able to pay for it. Managers should be excused only if the torts committed by the corporation arose out of an exceptionally awkward or 'freak' chain of events. A prima facie presumption that the corporation should be able to pay for all torts it actually committed is therefore warranted.

3. Judicial Errors in the Determination of Adequate Capitalization

Judicial errors in the determination of adequate capitalization are of course expected to occur. Errors toward leniency have a different effect than the opposite types

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49. One can think of this as a game between the corporation and the courts- whereby at each time one plays and sees how the other reacts. Initially several equilibria are possible, but because managers get to play for a long time before the court reacts - and torts will occur which will make the industry revise its standards of capitalization - this will probably give rise to a pretty accurate market estimation of the risk involved in the industry and the appropriate levels of capital needed to risk in this activity.

of errors.[50] Absent agency problems if corporations perceive that courts tend to determine adequate capitalization to be lower than the optimal level they will react by reducing their capitalization levels to those which are held to be adequate. There is no reason for them to bear the costs of obtaining access to more assets than those which are required in order to absolve managers from liability under the duty to capitalize. The result is that the corporate tort problem and its associated behavior effects reappear. On the other hand, the effect of an upward error in the determination of adequate capitalization would be mainly distributional. Corporations will increase their capitalization to optimal levels and bear the additional liability costs resulting from upward judicial mistakes.[51] Corporate response to the incentive structure set by the tort system will not change because corporations will continue to internalize the full tort liability costs associated with their activities. Their costs of engaging in such activities will rise.

Managerial agency problems alter the effects of judicial mistakes. As was explained earlier corporations are expected to maintain capitalization levels which are sufficient to reduce expected liability under the duty to capitalize to very low levels in order to induce managers not to be overly cautious.[52] Absent judicial errors corporations will maintain capitalization levels equal to those determined by courts to be adequate. By maintaining this level corporations can assure managers that their liability under the duty to capitalize will be zero. The possibility of judicial errors introduces uncertainly into the determination of adequate capitalization. From the point of view of managers upward judicial errors are

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50. See: S. Shavell, supra note 20.

51. Id.

52. See section IIB above.

very costly while downward errors carry no cost at all. Therefore if corporations wish to assure managers that their liability will be negligible they must capitalize at levels higher than the expected adequate level in order to accommodate for upward judicial errors. For example, X Inc's activities are expected to give rise to a tort liability of 10,000 with a probability of 99% and 100,000 with probability of 1%. The court is certain to set adequate capitalization at 10,000 to cover 99.17%[53] of X Inc's expected tort liabilities. X Inc will respond by capitalizing at this level for no liability will attach to managers even if it will end up causing the higher damages. If however, the court is expected to make an error of 1,000 and set adequate capitalization at 9,000 or 11,000 with equal probability expected managerial liability will rise to 450 if X Inc continues to maintain the same capitalization level.[54] in order to absolve managers entirely from liability entirely it will have to increase its capitalization to 11,000.

For any given level of capitalization determined by courts to be adequate corporations will therefore respond by capitalizing at higher levels in order to avoid liability resulting from future upward judicial errors. This also means that market data used by courts to determine adequate capitalization will also be biased upwards. The magnitude of corporate over-reaction to the possibility of upward errors depends upon the gravity of the agency problem, the likelihood and magnitude of judicial errors and the cost of maintaining excessive capitalization levels. To alleviate these problems courts need to bias their estimation of adequate capitalization downwards so that the expected value of

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53. $$\frac{10{,}000}{99\%*10{,}000 + 1\%*100{,}000}$$

54. 1%*50%*(100,000 - 10,000).

adequate capitalization will be set at levels lower than optimal. [55] Corporations will over-react to the lower adequate capitalization standard resulting from such bias by maintaining higher capitalization levels rendering actual capitalization closer to the desirable level.

4. Fluctuations in the Asset base of the Corporation After the Tort Occurred

Both actual and adequate capitalization vary over time as the activities of the corporation and its capital requirements change. The time in which liability may first attach is when the tort for which the corporation cannot pay is committed. Fluctuations in actual and adequate capitalization during the interval between this time and the time the corporation will actually be required to pay for the damage it caused may affect liability in several ways.

If at the time the tort is committed actual capitalization is lower than adequate capitalization managers will be held liable for the unpaid residual of the damage if such will exist. Although for the purpose of determining liability both actual and adequate capitalization are measured at the time the tort occurs actual capitalization is ultimately tested only at the time the corporation is required to pay for the damage. The duty will be relevant only if actual capitalization at time of payment will not suffice to pay for all of the damage. Thus if the corporation increases its capitalization after the tort occurred and will be able to pay for the damage in full the issue of managerial liability will become moot.

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55. Courts can adjust the extent of the liability to compensate for risk aversion and other problems (Kraakman & Hansman, supra note 4 at 1917- reduce total liability when shareholders are individuals so as not to place upon them an impossible burden).

Torts which are committed by the corporation deplete its asset base because a portion of its potential tort liabilities become a certainty. An increase in corporate capital after a tort is committed will always be necessary to avoid managerial liability for future torts if before the tort the corporation was capitalization at the adequate level. For example, Y Inc's activities may cause a recurring accident with a foreseeable harm of 1000. Adequate capitalization is set at 2000 to cover the possibility that two accidents will occur at the same time. Once a tort occurs a certain tort liability of 1000 is created. However, if the nature of Y Inc's activities do not change it is still foreseeable that two accidents will happen in the future. If Y Inc was originally capitalized at the adequate level of 2000 its assets will have to be replenished by the 1000 paid for the tort which was committed. Otherwise, managers will be held liable if the corporation will commit more than one tort in the future.

The adequate capitalization level will also increase in many cases following the occurrence of a tort even if corporate activities do not change. Adequate capitalization is a function of anticipated corporate tort liabilities in light of its activities. New information gathered about the hazardous nature of such activities changes the outlook of future tort liabilities of the corporation. If such information reveals that the activities of the corporation are less prone to accidents adequate capitalization will decline and vice versa. One such piece of information is the number of torts which arose in the past from such activities and the magnitude of harm associated with such torts. Clearly, the higher past tort liabilities are the higher adequate capitalization should be set at in the future. In some cases past torts may lead to a reduction in adequate capitalization. This can happen for example if the damages caused by past tortuous acts turn out to be lower than expected before such acts occurred resulting in a reduction in the magnitude of harm which the corporation is expected to cause in the future.

The likelihood that the corporation will be able to raise additional funds depends on the magnitude of tort damages relative to the assets of the corporation. If the damages render the corporation insolvent it is unlikely that it will be able to raise more capital by turning to new investors for any such increase will cause an immediate transfer of wealth from the new investors to tort creditors. In such cases managers will probably cause the corporation to liquidate its hazardous activities immediately after the fact that the tort has occurred will be known to them.

It is also possible that the actual capitalization of the corporation will change as a result of its business activities. In this case both the risk and reward of such changes accrue to managers. If the business of the corporation will generate losses the magnitude of liability under the duty to capitalize may increase. The opposite will occur if the business of the corporation will be profitable. The extent of the change depends on the size of the profit or loss and the proportion of corporate assets dedicated for tort debts satisfaction, such as liability insurance.[56] As in any other insolvency or near insolvency situation if managers expect to be rendered insolvent by their liability they will be induced to increase the risk associated with the business of the corporation to undesirable levels for they may benefit from the gains resulting from risky activities but they do not expect to bear the losses.[57] Shareholders will be better off in such cases by replacing mangers with new managers who do not bear any liability for the damage. Still, as explained later[58] the

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56. See above sections II(C)(1)(c) and (d)- assets such as liability insurance policies will not be affected at all by such a loss.

57. See: Smith & Warner, On Financial Contracting- an analysis of bond Covenants, 7 Journal of Financial Economics 161 (1979).

58. See section IIG below.

case of insolvent managers will probably exceptional for in most cases their losses will be covered by insurers.

It at the time the tort is committed actual capitalization is higher than adequate capitalization no liability will attach to managers at the time of the tort. The same will obviously hold if actual capitalization will increase at any time thereafter. Managers have no reason in this case to increase the risk associated with corporate activities without maintaining adequate capitalization levels to for by doing so they expose themselves to liability for torts committed in the future.

The duty should not trigger retroactively with respect to torts committed in the past if the corporation decreases its capitalization to an inadequate level after such torts were committed. The ability to withdraw assets from the corporation after the tort occurred does not dilute the ex ante incentive effect of the duty because by doing so managers will be exposed to liability if another tort will be committed by the corporation. If following this new tort the corporation will become insolvent managers will be liable for the total unpaid residual, including that of the first tort which occurred at a time when the corporation was still capitalized adequately. Thus, if managers are willing to take the risk that a new tort for which the corporation will not be able to pay will occur it is probably because the reduction in corporate asset base is efficient. Finally, another reason not to hold managers liable in this case it that decreases in corporate capitalization which occur before the corporation becomes insolvent are dealt with by insolvency laws which annul such transactions in appropriate cases through fraudulent conveyance and similar rules.[59] The same holds if adequate capitalization will increase after the tort was committed.

D. Costs of Excessive Capitalization

Corporations are expected to respond to the duty to capitalize by increasing the amount of assets available for tort victim collection. The amount of excessive capitalization that the corporation will actually end up maintaining is a function of the standard of liability and the intensity of the managerial agency problem. Absent agency problems corporations will not increase their capitalization beyond optimal levels even if adequate capitalization is set at a higher levels. However, as was shown earlier, in order to overcome the agency problem corporations may find it necessary will to capitalize at levels which absolve managers from liability entirely. The expected costs of managers' liability under the duty to capitalize rise with the standard of liability. As a result, the higher adequate capitalization will be set at the more capital will the corporation obtain. This section deals with the costs associated with such excessive capitalization.

Making more assets available for satisfaction of tort debts does not necessarily entail increasing the total amount of assets at the disposal of the corporation. The same can also be achieved by changing the allocation of entitlements to corporate assets between the various claimants by replacing senior debt with debt which is subordinated to tort debts or with equity. Nevertheless, corporations will probably find it necessary to

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59. For a general discussion of such rules see: Robert C. Clark, Corporate Law §2.2 (1986)

maintain an asset base which exceeds the amount required to finance their regular activities. This does not mean that corporations need to wastefully tie up resources otherwise available for other activities because the corporate asset base can be increased by drawing upon non-cash sources. Also, excess cash within the corporation may be invested in other activities. Still, the increase in corporate capitalization is not costless. Two types of costs may be associated with excessive corporate capitalization - agency costs associated with free cash within the firm and transaction costs associated with management of these excess funds.

Excessive amounts of free cash within a firm reduce its competitiveness by alleviating market pressures from management.[60] This can pretty much be avoided by financing excessive capitalization though unpaid equity or primary liability insurance. Of course, reliance on such non-cash sources in not always feasible. Available primary liability insurance coverage is not unlimited and may cost much more than the expected value of the liability insured due to administrative costs, especially if the actions of the insured are not readily observable to the insurer giving rise to moral hazard problems.[61] Issuance and maintenance of liquid and tradable unpaid equity is also quite costly.[62] The corporation will therefore have to rely also on cash financing such as paid equity and debt. The effects of excessive cash levels maintained within the corporation can however be reduced

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60. See Jensen, Agency Costs of Free Cash Flows, Corporate Finance, and Takeovers, 76 Am. Econ. Rev. 323 (1986); Mann & Sicherman, The Agency Costs of Free Cash Flow: Acquisition Activity and Equity Issues, 64 Jour. Bus. 213 (1991).

61. Hansman & Kraakman, supra note 4 at 1889-90; See: S. Shavell, supra note 20 at 211.

62. The costs are much the same as maintaining an unlimited liability regime. See below section IV(A).

significantly through organizational means. Corporations can, for example, commit that excess funds will be directed to a separate subsidiary or to a special fund and be passively invested elsewhere in a manner similar to mutual fund. The availability of such funds to finance the day to day operations of the firm can be restricted or eliminated entirely. The fund can be made to operate as an almost entirely independent mutual fund by contractually restricted in the type of investments it makes and requiring it to maintain a high degree of diversification. In such a case the amounts raised by the corporation will not have much effect on its ordinary activities. By providing such funds shareholders or creditors are depositing with the corporation a bond which is intended to induce managers to disregard the risk associated with the duty to capitalize. The providers of these funds are guaranteeing the tort debts of the corporations up to the amount of the excess capital they provide. From the point of view of investors, there is little difference between purchasing shares of unpaid equity and investing their cash themselves and paying upfront cash for shares of paid equity. In both cases the cash ends up being passively invested in a diversified portfolio as long as it is not needed to finance corporate tort liabilities. The only difference is that in the first case the cash is invested by investor while in the second it is invested by the corporation on the corporation on behalf of the investor. In the extreme, if the amount of excessive assets required by the corporation will be very high, is it is not impossible that they will offer a variety of diversified portfolios tailored to different preferences of the various investor. Each portfolio will comprise of an equity stake in the corporation itself bundled with a stake in a fund whose investment strategy will appeal to such investor. The only connection between the corporation and the fund will be that the fund's assets will be used to pay for corporate tort debts if necessary. Of course, in most cases such an elaborate scheme may be unnecessary and excess cash will simply be invested by the corporation in a diversified portfolio of other firms, resulting simply in an increase in the cross ownership of businesses.

Excessive capitalization also creates several layers of transaction costs. These include the one time costs of issuing securities or making and renewing insurance or debt contracts as well as the on-going costs of administering and investing the excessive cash. Both types of costs should be negligible. Issuance costs will be incurred only once. Renewal of insurance contracts should also not be costly because the re-negotiation required is minimal. Renewal of debt contracts may be somewhat costlier because more terms may have to be re-negotiated but will occur much less frequently than renewal of insurance contracts. Over time these costs should not be very significant.

The incremental costs of investing excessive cash are also probably negligible. Much of these costs will be incurred anyway and will only shifted from the provider of the capital to the corporation. There is no reason to think that the corporation will spend on investing these assets more than any manager of pools of assets such as mutual funds or closed end funds, for if the corporation is not as apt in running its excessive cash it can reduce the cost of managing the funds by hiring a professional fund manager. From the point of view of the provider of the assets it should make little difference costwise between investing these funds directly in a mutual fund, or having the corporation make this investment for him. The only additional costs incurred will be those associated with having an additional layer of monitoring.

E. MANAGERIAL RISK AVERSION

Shareholders of publicly held corporations protect themselves against risk by diversifying their portfolios. They are risk neutral in respect of specific firms and they want corporations to act in a manner which will reflect this attitude. Managers on the other hand are risk averse regarding the fortunes of the firm they work for. Their ability to diversify is much more limited. A substantial part of their financial and human capital is tied to the corporation they serve, much of which may be firm specific. Risk averse managers tend to refrain from taking risks which may jeopardize their undiversified investment in their firm.

This divergence between shareholders and managers is also demonstrated in X Inc's example. The two managers are extremely risk averse with respect to the loss each of them may incur if the accident occurs which will render both of them insolvent.[63] The one hundred shareholders are completely indifferent to the risk of losing their entire investment in the corporation. Even if they are led to increase its capitalization to 30,000 or give up limited liability altogether and assume its tort liability in whole they will still not care much about the risk of the accident occurring for the loss of each shareholder will be at most 200[64] or 4% of his assets.

In a perfectly functioning world without monitoring and transaction costs world this difference in attitudes towards risk would not have mattered. Managers would have been able to fully protect themselves from the risk associated with any liability associated with their firm by obtaining full insurance coverage for their liability. In a less perfect world in which shareholders' ability to control the actions of managers is limited and in which managerial actions are not always observable or monitorable by outsiders full and unrestricted insurance coverage may not be always available. The managerial agency problem is aggravated by the divergence in attitudes towards risk between managers and

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63. Each of the managers whose assets are worth 5,000 will be liable for one half of the 17,800 of unpaid corporate tort damages.

64. The total damage of 20,000 divided by the 100 shareholders.

shareholders because this divergence makes it much harder to align the interests of managers with those of shareholders.

Against this background, one of the main concerns about introduction of duty to capitalize is that burdening managers with a residual liability for corporate tort debts will aggravate the problem. As was shown even risk neutral managers tend to over-react to the possibility that they will be liable for corporate torts because they do not fully internalize the cost of such over-reaction. The risk associated with losing all their assets if they become liable for corporate torts will prompt managers even more to exercise too much caution in conducting the corporate business. As a result they will cause corporations to invest far too much in safety and to refrain from engaging in risky but socially desirable activities. Clearly, managerial risk aversion makes the case for the duty to capitalize harder to make. Still, there are several reasons why the duty may be desirable notwithstanding such risk aversion.

1. Excessive Capitalization

Risk averse managers can reduce their expected liability under the duty to capitalize not only by taking precautions and reducing activity levels, but also by raising the firm's capitalization level. In all probability in attempting to reduce their exposure to liability managers will rely mostly on increasing corporate capitalization levels to excessive levels rather than on giving up desirable activities or taking too much care. Managers will change corporate risk taking behavior only if the cost associated with this action is lower than the cost of obtaining additional capital. As explained in the preceding section the costs of excessive capitalization should be quite low. Therefore, the loss of socially desirable activities should be marginal. Only activities which create very low value which is exceeded by the low cost of excessive capitalization will be lost.

2. Availability of Insurance for Managers' Liability under the Duty

Risk aversion diminishes the fuller the insurance coverage available. Although insurance markets never provide full and unrestricted liability coverage for any risk it is highly likely that the coverage available for managers' liability under the duty to capitalize will be quite close to full coverage.[65]

Increasing the asset base of the corporation to levels high enough to pay all tort claimants should render full secondary insurance coverage for managers feasible. First, as the expected liability of managers declines to zero, the dominant variable upon which the insurance premium will be based is the capital structure of the corporation. Unlike particular actions of the firm this variable is readily monitorable by insurers and comparable across firms and industries. Insurers can quite easily construct premium structures which will take the firm's capitalization into account. Second, as explained above the costs which will be created if insurers insist that the corporation maintain excessive capitalization should not be very high. Third, there are practically no moral hazard problems associated with such insurance. Because given that in any case firms will be capitalized in a manner which covers almost all possible damages they may cause, they will carry the full costs of engaging in undesirable activities.

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65. See also Hansman & Kraakman, supra note 4 at 1888 [availability of insurance for shareholders under unlimited liability].

3. Reducing the Expected Value of Liability

The effect of managerial risk aversion diminishes the lower expected liability under the duty. The lower the standard of liability the lower will expected liability be.[66] It was suggested earlier that due to the possibility that judicial errors will occur a bias towards leniency in setting adequate capitalization is warranted because of managerial agency problems which cause corporations to over-react to any standard set by courts. Managerial risk aversion aggravates this tendency. This means that the bias toward leniency in the determination of adequate capitalization should be made even stronger to allow for the stronger expected corporate reaction to the duty to capitalize. A relatively low adequate capitalization standard, which will result in very few cases where managers will be actually held liable may therefore go a long way in ameliorating the corporate tort problem.

4. Social Risk Aversion

Although risk neutral shareholders always want to induce managers to act in a manner which will reflect this attitude, some managerial risk aversion may still be socially desirable in extreme cases when corporate actions may cause huge widespread damage in a certain country or a certain region. Society at large may be risk averse regarding such accidents and would wish that corporations conducting business within the society will internalize such risk aversion into their decision process. The main task of internalizing

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66. S. Shavell, supra note 20, expected costs are higher under strict liability because under negligence there is no liability if due care is taken.

such risk aversion to the corporation should be shouldered by the primary liability rules but the fact that managers retain a slight risk averse bias in their decision making process regarding the possibility that corporations will cause such harm is also beneficial.

At the extreme spectrum of possible disasters caused by corporate activities there are accidents regarding which both managers and shareholders are risk averse. This, for example, may be the situation regarding corporations operating nuclear power plants. Managerial risk aversion regarding the possibility of such accidents is certainly warranted.

F. MANAGERIAL HORIZONS AND LONG TERM TORTS

Suit for breach of the duty to capitalize will be brought only after the corporation becomes insolvent with tort claims unfulfilled. In many cases the fact that a tort has been committed or the extent of the damage arising from it will become known only years after its occurrence. Yet in other instances the tort itself may be committed over a long period of time. This means that in some instances action against managers will be brought many years after the tort was committed by the corporation. By that time the managers who directed corporate behavior at the time the tort was committed may be long gone.

Still, this should not hinder the ex ante responsiveness of managers to the incentives which the duty to capitalize aims to create. Clearly, the prospect of an imminent suit looms larger than a suit which may be brought thirty years from now. Nonetheless, at the time managers are called to decide how the corporation is to be capitalized in light of its activities they do not know whether a tort will be committed ten, twenty, or forty years later. They do know however that whenever such a suit will be brought, they are quite likely to lose most or all of their assets.[67] As long as managers believe that such a suit will be brought against them sometime during their lifetime they should be sufficiently induced to cause the corporation to be better capitalized. Such a belief is indeed warranted for suits will probably be brought during the life span of the victims or soon thereafter and on average victims life spans should not be longer than managers.

Furthermore, in at least one respect the prospect of long term suits may be more menacing than the prospect of short term suits. Managers will find it extremely hard to protect assets accumulated by them during the interval between the time they breached their liability under the duty to capitalize and the time suit will be brought. The longer it takes for a suit to be brought the higher will be the proportion of assets which managers expect to accumulate in the future which may be forfeited to pay corporate tort creditors. Managers who want to protect a high proportion of their earning capacity would therefore wish that suit against them will be brought as early as possible in order to have their future earning protected by bankruptcy discharge. This holds true even if bankruptcy is expected to reduce their future earning potential. While bankruptcy may result in forfeiture of some future earning prospects a suit brought at a late stage after such earnings are realized may wipe them out entirely.

Finally, although on average the horizon of most managers is long enough to make them take into account long term liability under the duty to capitalize the threat of long term suits is clearly more worrisome to younger executives. This means that corporations

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67. Rose-Ackerman, supra note 19.

whose senior management does not care to maintain adequate capitalization to cushion managers against long term liability will find it harder to recruit young executives.

To sum up, it is reasonable to assume that almost all corporations will have a sufficient number of executives whose horizons will be long enough to make the duty to capitalize effective with respect to long term corporate tort liability.

G. JUDGMENT PROOF MANAGERS

Another concern about the effectiveness of the duty to capitalize stems from the fact that even if managers will be held liable under the duty for the unpaid residual of corporate tort liabilities they are unlikely to have assets sufficient to make good on this liability.[68] A numerical exposition of the relative magnitude of managers assets can be found in the first X Inc example.[69] The assets of both X Inc's managers which are worth 10,000 suffice to pay only for a little more than 50% of the unpaid primary liability of the corporation which is 19,500.

The purpose of the duty to capitalize is not compensatory but incentive related. It is not aimed to get managers to pay tort victims but to induce them to cause corporations managed by them to increase their capitalization. This incentive effect of the duty to capitalize is not diminished at all by the fact that managers are partially judgment proof. From the point of view of managers the utility costs imposed on them on if they are held

68. See for example, Hansman & Kraakman, supra note 4 at 1929

69. See section II(A)

liable under the duty are enormous for such liability is likely to forfeit most if not all of their assets. As was explained managers are deeply risk averse regarding losses of this magnitude which may accrue to them from liability under the duty. If anything, they are expected to react too strongly even to a mild version of the duty to capitalize.

Nonetheless, introduction of the duty improves also the compensation outlook for tort victims. To the extent that the duty will cause corporations to be better capitalized tort victims are much likelier to be compensated from the assets of the corporation. In addition, as managers are certain to be insured against their liability[70] tort victims will be able to turn to the deeper pockets of the insurer if the corporation turns out to be inadequately capitalized.

H. ATTACHMENT OF LIABILITY

The group of corporate actors to be charged with the duty to capitalize should be delineated from the top downwards. The obvious candidates are corporate directors, chief executives and executives having overall responsibility for the operations and finances of the firm. Lower management tiers will be subjected to the duty to the extent that their responsibility places them in a position to assess the likelihood that the activities under their supervision will cause tort damages which the corporation will not be able to cover or those who are responsible for financing for such activities. Thus, while liability will always attach to top management lower tiers will be added on a case by case basis, depending on the nature of their responsibility. For example, X Inc is engaged in two types

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70. See sections II(0)(2) and (G)

of activities. It is managed by three managers. CEO in charge of its overall operations, executive A in charge of activity A, and Executive B responsible of activity B. X Inc commits tort A in the process of conducting activity A and tort B in the process of conducting activity B. Liability for the unpaid residual of tort A will attach to CEO and Executive A. Liability for the unpaid residual of Tort B will attach to CEO and Executive B. CEO will be liable in both cases. Liability of Executives A and B attaches based on their responsibilities. Liability can attach to neither unless it attaches first to CEO.

There are several reasons why the duty should be applicable relatively broadly within the firm. Limiting applicability of the duty to directors and chief executives may hinder its effectiveness. Boards and chief executives can be distanced from corporate creditors by moving them to other jurisdictions. This will create a difficult international enforcement problem. Attaching the duty to lower management tiers based on a functional test of their actual responsibilities solves this problem because it ensures that the more local hazardous activities are conducted by the corporation the higher will be the number of local executives who will be charged with liability if this activity is not well financed. A foreign corporation exporting finished goods to a local jurisdiction will need few local executives. But should such a corporation wish to operate a local plant it will have to have a significant number of executives on site to supervise the operations of the plant. Liability should always attach to the most senior local executives of foreign corporations. A foreign firm wishing to conduct hazardous local activities will not be able to recruit local personnel to conduct such activities unless it will assure them that this activity is well capitalized and insures them against their liability under the duty.

Broad application of the duty to capitalize also renders its incentive effect more consistent across all firms. It was suggested earlier that on average executives' horizons are long enough to make them care about long term tort and that pretty much all firms can be expected to have a sufficient number of executives with sufficiently long term horizons. Attaching the duty to directors and chief executives only will render it ineffective with respect to firms run by boards and chief executives whose horizons are much shorter than average. It is quite possible that some firms will be run by directors and chief executives who do not care at all about the future. Attaching the duty to a larger number of executives increases the likelihood that the executive body within each firm as a whole will be closer to the average thereby increasing the likelihood that most firms will be responsive to the duty.

Spreading the burden of the duty over a larger number of people within the corporate community also reduces the expected liability of each individual manager thus assisting in ameliorating the managerial risk aversion problem. Distribution of liability among managers is also sensitive to their risk aversion. Higher placed executives can be expected to be more affluent and to be able to shoulder higher losses. They are therefore apportioned a higher relative fraction of the liability under the duty. To see this assume that the expected damage which Activity A and Activity B will cause is 10,000. Total expected liability under the duty is 20,000. Of this amount 10,000 is shouldered by CEO. Expected liability of each of Executive A and Executive B is 5,000.

Similar considerations apply in setting the time of attachment of liability. Compliance with the duty is examined by the court from the time the tort was committed onwards.[71] Liability should attach to executives who were able to influence corporate decision making at the times in which compliance is examined. This will include almost all

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71. See section II(C)(4) above.

executives serving at the time in which the tort is committed apart from those who were hired just before the duty was committed. Executives who left the corporation just before the tort was committed should also be included. Liability should not attach to executives hired after the tort was committed just because they joined the corporation. However, their actions during the period up to the time the tort claim is satisfied may give rise to liability which will include past torts. Existing tort liabilities affect both adequate and actual capitalization.[72] In conducting corporate affairs managers should therefore take such liabilities into account.

The broad definitions of the group of managers subjected to the duty as well as the attachment date are bound to be somewhat vague in the margins. Still, the effect of such vagueness is lessened significantly due to the fact that attachment rolls only from the top downwards. The total expected liability of the executive body of each firm does not change at all by making lower management liable together with senior management. It simply means that more people share in the same liability. This means that firms should be able to expand coverage to all executives who may possibly be found liable under the duty at no cost because such expanded coverage does not change the expected liability cost of the insurer at all.

I. CLOSELY HELD CORPORATIONS

The analysis concentrated so far on publicly held corporations. Managers were assumed to be a distinct group of corporate actors which holds a small fraction of the

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72. See section II(C)(4) above.

equity of the corporation. Shareholders were assumed to be a much larger group of passive investors which is incapable of exercising direct control over managerial decision making. Closely held corporations are different. The groups of shareholders and managers are comprised mostly of the same people and in many cases are entirely identical. Even in cases where the principal shareholders are not managing the corporation they are able to control as much of the corporate decision making as they wish. Unlike publicly held corporations, few managers of closely held corporations are able to act contrary to the wishes of their shareholders on major issues such as the one presented by the duty to capitalize.

All this suggests that the duty to capitalize will operate quite differently in a closely held corporation setting. To the extent that managers and shareholders are one and the same the duty operates in a manner similar to unlimited liability in the sense that shareholders end up carrying the burden of liability. It should be emphasized however that liability under the duty liability attaches to managers in their capacity as such and not in their capacity as shareholders. Therefore, it will not be possible for managers to escape liability by artificially creating a distinct body of incorporated shareholders and distancing it from corporate creditors by placing it in a foreign jurisdiction. This renders the duty to capitalize much more effective than a straight unlimited liability rule. Another difference between the two rules is that while under unlimited liability shareholders are liable for all corporate debts without limitation, liability under the duty to capitalize will attach only with respect to tort debts and only if adequate capitalization is not maintained.

As a close corporation evolves the group of managers becomes more distinct from the group of shareholders and the effective control of shareholders over managerial decision making declines, operation of the duty will become closer to that which plays out in a publicly held corporations. However, throughout this evolution managers will demand that the corporation will be adequately capitalized by shareholders. It is likely that middle ground corporations will rely primarily on primary and secondary liability insurance as a source of capital available for tort claims. In some instances shareholders will have to place their entire wealth on the line by guaranteeing the liability of managers in order to obtain insurance for managers.

The duty to capitalize will cause closely held corporations intending to engage in hazardous activities to expose all of their shareholders assets to liability. This does not solve the problem of people engaging in activities when their wealth constraints render them undeterrable by tort law. It only eliminates their ability to use corporate shells to artificially introduce a lower asset constraint to such activities. This is important not only for corporations held closely by individuals but also to the use of closely held entities within groups of large publicly held corporations.

J. CONCLUSION

A duty to capitalize based on a downward biased lenient standard goes a long way towards ameliorating the corporate tort problem. In order to avoid managerial agency problems corporations can be expected to respond to the duty by increasing their capitalization up to a level which will be somewhat higher than what courts are expected to determine to be adequate. Managers will insure against any remaining liability under the rule. Due to the low expected value of such liability full insurance coverage should be available. In the process more assets will be made available to cover corporate tort liabilities. Corporations will internalize more of the costs imposed on them by the tort system thereby increasing their responsiveness to the incentive structure set by the system.

III. THE DUTY FROM CORPORATE AND TORT LAW PERSPECTIVE

A. THE LEGAL SOURCE OF THE DUTY

From a theoretical point of view it hardly matters whether the duty to capitalize is introduced into tort law, corporate law or through any other branch of the law for in either case it would operate in the same manner. However, two issues may be relevant in determining the legal source the duty. First, the duty should be applied federally rather than on a state by state basis.[73] Second, initially it is better to experiment with a limited version of the duty which will apply only to corporations conducting specific activities rather than across the board to all corporations. Not only will this reduce the risk that the duty will not work as anticipated, but also the likelihood of a limited duty actually being enacted is much higher than a generally applicable rule, especially with respect to disfavored activities. One such activity which readily comes to mind as a candidate for limited application of the duty is the production and distribution of tobacco products.

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73. See also Hansman & Kraakman, supra note 4 at 1921-23; For a discussion of related procedural enforcement issues on the state and federal level: Alexander supra note 10; Kraakman & Hansman, A procedural focus on unlimited shareholder liability, supra note 7; Grundfest, supra note 9 at 395-6.

B. The Relationship Between the Duty to Capitalize and the Primary Tort Liability of the Corporation

The duty to capitalize is an independent liability rule. It is not derived from the liability of the corporation for its own torts. Nonetheless, the two liability rules are related in several respects. First, the purpose of the duty to capitalize it to create an environment in which corporations will respond to the incentives created by the primary liability rules. Second, commission of a primary tort by the corporation is one of the factual building blocks of the breach of the duty to capitalize. Third, the amount of capital corporations need to raise to absolve managers from liability under the duty is a function of the aggregate expected primary tort liabilities of the corporation. Thus, the creation of a new primary tort or raising of the standard of liability applied to an existing primary tort implies that managers need to increase the capital cushion available for tort victim collection in order to comply with the duty to capitalize.

One important implication of the independence of the duty to capitalize from primary corporate tort liability is that the choice of standard for breach of this duty does not depend on standard applied to the tort committed by the corporation. This independence of the duty to capitalize makes it an attractive solution to the under-capitalization problem. The standard of liability of the duty can be set in a manner which will maximize its effectiveness in ameliorating the corporate tort problem at a minimal cost, while the standard applied to the tortuous activities of corporations and other actors will be set based on efficiency considerations which are relevant for these activities.

C. The Relationship Between The Duty to capitalize and the Liability of Corporate Actors as Joint Tortfeasors

The duty to capitalize is also quite different from the common tort agency norms, such as respondeat superior, which make corporate actors liable together with the corporation for primary corporate torts.[74] Unlike the duty to capitalize, tort agency liability is not an independent liability rule, but an extension of a certain tort duty to a principal in whose service the tort is committed.[75] The corporation and its agents who participated in committing the tort are both held to the standard of conduct required by the specific tort committed by them.[76] Thus for example the driver of a truck carrying hazardous materials which was involved in an accident will be liable together with the corporation for damages arising from such accident. Liability under the duty to capitalize will attach only if the corporation did not pay for the damage it was held responsible for and if it will be determined that it was not adequately capitalized.

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74. For a general description of tort agency norms see Restatement (Second), Agency §343. See also Thompson, supra note 9 at 7-8.

75. From a strict tort law perspective the extension of liability is from the agent to the principal and not as described in the text. However, from a functional point of view, the publicly held corporation usually has the deepest pockets, and thus is the more important tortfeasor. In many cases it will indemnify the agent for its share of the liability. Although the legal ramifications of the two formulations are somewhat different, for the purpose of illustrating the issues at hand portraying the corporation as the main tortfeasor, whose liability extends to the agent is more convenient.

76. The corporation and its managers who breach their duty to capitalize can also be viewed as joint tortfeasors in the sense that they caused the same damages, to the extent that the reason that the corporation committed the tort can be attributed to the fact that it was under-capitalized. But this has no bearing on the issue at hand.

The two rules also differ as to the scope of liability they create. Joint tortfeasors are jointly and severally liable for all the damage they cause. Allocation of the damages between joint tortfeasors is based on factors such as the relative blame attached to each tortfeasor. Allocation of damages between the corporation and managers who breached their duty to capitalize is based solely on ability of the corporation to pay for the damage. Breach of the duty to capitalize creates only a residual liability for that portion of the damages that the corporation could not pay for.[77]

Another important difference between the duty to capitalize and tort agency norms is that each attaches to different people in the corporate community. Tort agency rules attach to people who actually participated in committing a tort together with the corporation. Liability may also extend to his supervisors, and further up the corporate chain of command. However, executives such as the chief financial officer of the corporation probably will have had nothing to do with the accident or with supervising corporate procedures which caused it, and will not be liable with the corporation. The duty to capitalize will attach first and foremost to such executives who are best poised to

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77. The independence of the two rules bears also some procedural ramifications. Joint tortfeasors can always be sued with the corporation, but suit for breach of the duty to capitalize should be normally brought only after the corporation lost the primary tort suit and was rendered insolvent. It is possible, but not logically necessary, to allow such suit to be brought concurrently with the primary tort suit when it is clear that if the corporation will lose the primary suit it will not have enough assets to pay for it. Still, judgment against managers can be delivered only after the primary tort liability was determined

The Statute of limitations is also different for each rule. The period of limitation for the duty to capitalize should start running only when the corporation was rendered insolvent. For the insolvency itself is part of the tort.

determine that the corporation was under-capitalized relative to the type of business it was engaged in and who could do something about it.

IV. THE DUTY TO CAPITALIZE AND OTHER SUGGESTED SOLUTIONS TO THE CORPORATE TORT PROBLEM.

In this part several other rules which have bearing on the corporate tort problem are described and compared with the duty to capitalize. The first section deals with unlimited liability and the second with a duty to obtain liability insurance. The following sections consider bankruptcy priorities, pierce of the corporate veil doctrine and minimum capitalization requirements.

A. UNLIMITED SHAREHOLDER LIABILITY

Under an unlimited liability rule[78] shareholders are held liable for all unpaid corporate debts. Liability is allocated among shareholders pro rata to their relative holdings.[79] Thus, a shareholder holding 10% of the equity of an insolvent corporation will be liable for 10% of unpaid corporate tort debts. Actual allocation of liability between

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78. This rule is also referred to in the literature as a 'proportional shareholder liability' rule.

79. See also Hansman & Kraakman, supra note 4 at 1893-4 [discussion of allocation of liability between shareholders]. Another allocation rule considered in the literature is joint and several liability which is demonstrated by various commentators to be inferior to pro rata liability. See Hansman & Kraakman, cf.; Leebron, supra note 7 at 1569-87; Halpern, Trebilcock & Turnball, supra note 12 at 136-8.

shareholders depends however also on the relative wealth of the shareholders. Generally, the wealthier a shareholder the higher the proportion such shareholder should expect to bear. [80] Here lies the first major problem associated with unlimited liability. As the cost of owning shares by judgment proof investors is lower than that of wealthy shareholders, financial markets will shift all straight equity holdings to judgment proof shareholders thereby practically recreating a limited liability regime.[81]

Unlimited liability bears some resemblance to the duty to capitalize in the sense that both rules extend the pool of assets that tort victims can be compensated from by adding to it the assets of some corporate actors. However, the two rules do operate differently in several very important respects. First, unlimited liability can be characterized as mandating issuance of unpaid equity in an amount equal to the total wealth of all shareholders as a residual source of assets to pay tort claimants. Under the duty to capitalize, unpaid equity is just one of several sources of assets which the corporation may draw upon to finance its tort liabilities. Second, unlimited liability attaches to shareholders while the duty to capitalize attaches to managers.[82] Third, under the duty to capitalize managers are liable only if the corporation failed to maintain adequate capitalization which may be adjusted to optimize the duty. Unlimited liability does not have a similar

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80. Under joint and several liability wealthy shareholders end up paying for judgment proof shareholders. Under a pro-rata rule liability of each shareholder is capped, but below this limit allocation depends also on wealth. See also Hansman & Kraakman, supra note 4 at 1891; Alexander, Supra note 10 at 425.

81. Grundfest, supra note 9

82. While a managerial duty is easier to enforce in all types of corporations, as far as corporate response to the duty is concerned, this difference is of primary importance for publicly held corporations, for as was explained earlier in a close corporation setting managers are also major shareholders. See section II(I) above.

adjustment mechanism. Shareholders are always liable if the corporation becomes insolvent. Finally, the scope of liability created by the two rules is different. While the duty to capitalize enables only tort creditors to be compensated, unlimited liability renders shareholders liable for all unpaid corporate debts.

It is possible, of course, to limit the scope of liability to tort debts[83] and to introduce an adequate capitalization standard to unlimited liability. The resulting rule would have nothing to do with the doctrine of unlimited liability but would be a duty to capitalize which attaches to shareholders rather than managers. This raises the question which of the two groups is the best primary bearer of the duty?

The main argument brought in favor of having shareholders of large public corporations bear the primary duty to cover unpaid corporate tort debts stems from the fact that their exposure to losses of individual corporations in which they invest is relatively small.[84] This means that they should less risk averse than managers.[85]

However, even well diversified shareholders are risk neutral only if the largest possible loss they may occur is relatively small compared to their assets. Shareholders are

83. For example Hansman & Kraakman, supra note 4 suggest limiting unlimited liability to involuntary creditors only.

84. A related argument, which was dealt with earlier is that as managers have aggregately less assets than shareholders they are judgment proof in respect of the tort damages. This issue was dealt with earlier (see section IIG).

85. See also section II(I) above. As is evident from the first X Inc's example, while each of the Managers stands to lose their total wealth of 5,000 if the tort occurs the loss of each of the one hundred shareholders will be only 178, which constitutes less then four percent of their assets.

expected therefore to seek insurance against the possibility of larger losses.[86] As there are far fewer managers than shareholders, the portion of the expected loss regarding which managers are risk averse is larger than shareholders. This means that for any given expected amount of residual liability, the magnitude of the losses for which shareholders will seek insurance coverage will be lower than that which managers will seek if liability were to attach to them. On the other hand, several factors point to lower reliance on secondary liability insurance under a managerial duty rule. First, to the extent that shareholders are risk neutral managers can shift a higher portion of any liability which attaches to them to shareholders rather than seek secondary insurance by causing the corporation to issue more paid or unpaid equity.[87] Therefore, a higher proportion of the liability will be shifted to sources other than insurance if liability attaches to managers than if liability attaches to shareholders and the amount of secondary insurance sought by managers will be lower. Second, the difference between the amount of insurance sought under the two rules should not be very high because the efficient mix of sources drawn upon to finance corporate tort liabilities does not depend on whether liability attaches to shareholders or to managers. Third, as a matter of definition equity rank lasts in the priority structure of corporate claimants. As a result the ability of shareholders to shift their liability to other providers of capital is more limited than managers. Under a unlimited liability rule the only way shareholders' liability can be lowered is by issuance of primary liability insurance. Debt will always rank senior to shareholders and will not

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86. Hansman & Kraakman, supra note 4 at 1886-93, 1901 [Small shareholders are expected to seek unlimited coverage in some cases even if the cost of such coverage will be higher than the expected value of their liability because they tend to over-estimate the risk involved]

87. See section II(C)(1)(a) above.

reduce shareholder exposure. Managerial liability can be reduced by primary liability insurance or by issuance of debt or equity. Thus, unlimited liability practically results in mandatory equity financing for tort claims coupled only with primary and secondary insurance, while the duty to capitalize enables the corporation to shift liability to the most efficient providers of capital.

All this suggests that the total amount of insurance sought by managers may not be very different from that sought by managers. The main difference between attaching liability to shareholders and attaching liability to managers in respect of the amount of secondary insurance sought will therefore be the number of policies issued and the amount of coverage of each policy. The number of policies needed to be issued if liability attaches to managers will be much smaller and each policy will need to cover a larger proportion of the loss. This means that the administrative costs of insuring managers should be lower than that of insuring managers.[88]

The difference in the composition between the group of managers and shareholders as well as the different entry and exit avenues to and from each group (shareholders buy or sell shares while managers are hired, fired or resign) also make managers more attractive candidates for liability. The cost associated with a regime of liquid and tradable unlimited liability equity securities are probably quite high.[89] The attachment and allocation criteria

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88. The higher number of shareholders translates also to higher recovery costs for damages awarded. See: Hansman & Kraakman, supra note 4 at 1895, 1899-1901; Leebron, supra note 7 at 26-8, 39; Woodward, supra note 18 at 604-6; Meiners, Mofsky, and Tollison, supra note 18 at 363.

89. See Grundfest, supra note 9, but see also Hansman & Kraakman, supra note 4 at 1903-6; Leebron, supra note 7 at 1608-12. All commentators agree that enforcement costs will be significant but differ on their nature and magnitude.

needed to be developed for a shareholder liability rule is complicated and raises difficult problems such as conflict of interests between old and new shareholders.[90] Also, allocation of liability among shareholders is complicated and is prone to costly judicial errors.[91]

Unlimited liability needs to rely on the financial markets pricing mechanism to convey the relevant information to shareholders.[92] However, as Professor Grundfest showed, the market mechanism is expected to function in a manner which will extinguish shareholder liability rather than simply convey information about its magnitude.[93]

Clearly, managers are much better informed than shareholders about the issues relevant to make correct decisions. They are most familiar with the corporation's business and best able to estimate both the potential tort risks associated with corporate activities as well as the level of capital required to service the potential tort liabilities which may arise from such activities. Managers are also best poised to cause the corporation to maintain the most efficient capital structure and to determine how much secondary

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90. See Hansman & Kraakman, supra note 4 at 1896-9. For a discussion of attachment of liability to managers see above section IIH.

91. For example, Hansman & Kraakman, supra note 4 at 1905 show that courts cannot adhere to a simple pro rata allocation rule because such a rule would be too burdensome for controlling shareholders. Thus they suggest that such shareholders will be assessed lower damages and that the total award will be adjusted downward thereby shifting the cost back to tort victims. Hansman & Kraakman, supra note 4 at 1905, 1916-9.

92. See: Hansman & Kraakman, supra note 4 at 1907; Leebron, supra note 7 at 1569-74; Grundfest, supra note 9 at 389-90.

93. This issue is a subject of extensive debate between Professors Hansman and Kraakman, and Professor Grundfest. See: Hansman & Kraakman, supra note 4 at 1909-16; Grundfest, supra note 9; Hansman & Kraakman, supra note 7. The text does not elaborate the arguments which were raised and analyzed extensively in this exchange.

insurance is needed. If liability attaches to managers, they can be expected to use this knowledge to maximize corporate value.[94] On the other hand, if liability attaches to shareholders, managers do not have any incentive to signal them the correct level of expected corporate tort liabilities. In fact, managers are expected to signal a lower level of risk in order to reduce the cost of capital of the corporation. This means that shareholders will bias upwards their estimation of the risk and obtain excessive insurance. Managers will find it difficult to establish a credible signaling mechanism which will lead to a correct level of insurance. A shareholder liability rule may therefore needlessly drive up corporate cost of capital. To be sure, shareholders may be allowed to hold managers accountable for their losses based on fiduciary duty if managers fail to convey correct information about the risk level of the corporation's business. This is functionally tantamount to a straight forward managerial duty to capitalize. The main difference between the rules in such a cases is added enforcement complications. Instead of suing managers directly, tort claimants will be compensated by shareholders who will turn to managers for compensation. Thus, both unlimited liability and the duty to capitalize may end up relying on managerial liability to cause the corporation to respond to tort incentives.[95]

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94. The mechanism which leads to this result was described in detail in sections II(B) and (C) above.

95. Note that managerial responsiveness to long term hazards may also be easier to achieve under the duty to capitalize than under unlimited liability. Shareholders will find it harder to cause managers to incorporate these costs into their decision making process because while under the duty to capitalize long term liability continues to attach to managers after they leave the firm, under unlimited liability managers will be able to cash in on shorter term gain and avoid future liability. See also Hansman & Kraakman, supra note 4 at 1908.

Attaching liability to shareholders poses a difficult enforcement problem on both the domestic and international levels.[96] As Grundfest showed markets can artificially create judgment proof shareholders and still allow wealthy investors to hold equity equivalent positions by utilizing foreign jurisdictions, by designing new kinds of securities or by using 'synthesized' securities.[97] For example, instead of holding 'straight' equity a wealthy shareholder can hold a combination of a call option and bonds which will mimic an equity position while leaving the shares in the hands of a judgment proof entity which will probably be placed overseas. Overcoming such techniques, if at all possible, requires an extensive regulatory regime of financial markets. The government must either restrict foreign shareholding or try to assert jurisdiction over foreign shareholders. Both of these options are quite problematic.

Unlike shareholders, managers cannot evade liability by using financial markets because liability attaches to them based on the physical activities they perform for the corporation and the actual responsibilities associated with their position in the corporate management structure.[98] Under the duty to capitalize policing of international enterprises is left to private contracting between foreign entities and the people who work for them domestically. Local executives will not agree to serve on foreign corporations which are

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96. Hansman & Kraakman, supra note 4 at 1922-3; about the internationalization financial markets in general see also Grundfest, Internationalization of the World's Securities Markets: Economic Causes and Regulatory Consequences, 4 J. Fin. Services Res. 349 (1990); Grundfest, supra note 9 at 398-9.

97. Grundfest, supra note 9 at 392-405 . For discussion of the design and use of options and synthesized securities see John C. Cox & Mark Rubinstein, Option Markets (1985); Brealy & Meiers, Principles of Corporate Finance (3rd ed. 1988).

98. See also Grundfest, supra 9 note at 391-2.

not capitalized adequately because this will expose them to liability under the duty. Capital adequacy requires that foreign corporations will make funds available to local tort claimants. Thus, the only way such foreign entities avoid liability is by physically moving hazardous activities abroad.

One final advantage of attaching liability to managers over unlimited shareholder liability is that it represents a much less radical reform of the current legal regime. Current law contains may open ended duties which attach to managers based on corporate fiduciary principles, tort liabilities, securities laws, criminal laws and so forth. Passive non controlling shareholders of public corporations are not subjected to any such duties or liabilities. Against this background, adding another duty to the extensive layer of rules governing managerial behavior constitutes a relatively modest reform. To the extent that substantially similar results can be achieved though a limited reform, then such reform should be preferred, even if the other solution would have been preferred in designing corporate law from a clean slate.

B. GRANTING TORT CREDITORS BANKRUPTCY SENIORITY

Another way of addressing the corporate tort problem which is suggested in the literature is making tort claims senior to all other contract claims in bankruptcy.[99] Making

99. See: Hansman & Kraakman, supra note 4 at 1929; Robert. C. Clark, Corporate Law (1986) at 79; Leebron, supra note 7 at 1641-3; Note, Tort Creditor Priority in the Secured Credit system: Asbestos Times, the Worst of Times, 36 Stan. L. Rev. 1045, 1080-3 (1984); For a discussion of the related doctrine of equitable subordination which gives tort claimants priority over other claimants in special circumstances see R. Clark, cf., section 2.3 at 52.

all contractual debt mandatorily junior to tort debts means that tort claimants will be able to collect a larger portion of any given amount of corporate assets. However, this rule does not create any incentive for corporations to increase their total capitalization. In fact, due to the increased cost of such junior debt corporations may actually reduce their capitalization levels. Thus, while the portion of the pie allocated to tort claimants is increased, the pie itself may actually shrink.[100]

Furthermore, any scheme which creates appropriate incentives for corporations to capitalize adequately will make mandatory prioritization of tort debt in bankruptcy redundant.[101] Once corporations are induced to obtain assets which will suffice to cover their tort debts, there is no longer any reason to make any particular form of financing of such assets mandatory.[102] To justify a rule which mandatorily makes contractual debt

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100. Bankruptcy prioritization raises numerous other difficult problems which will not be explored in detail due to the fact the major deficiency outlined in the text is enough to rule it out as a viable solution to the corporate tort problem. For example, it is very hard to define the group of 'contractual' creditors. Should customers be considered contractual creditors? Should secured financing be allowed priority over tort debts? Also, general fraudulent conveyances rules may not be adequate to deal with loans repaid by the corporation. It is likely that special rules regarding the conditions under which tort creditors will be allowed to reclaim loans which were repaid before the corporation became insolvent will have to be designed, at least with respect to particular forms of debts such as unsecured bank credit lines.

101. Note that this applies for both secured and unsecured debt for as explained earlier secured debt is not considered as part of the actual capitalization of the corporation for the purpose of determination of compliance with adequate capitalization. Therefore if corporations obtain secured credit they need to obtain alternative financing for potential tort claims to comply with the duty.

102. Hansman & Kraakman think that under unlimited liability a rule giving mandatory bankruptcy priority to contract claimant is justified because it increases the total size of the pie available for creditor collection. See Hansman & Kraakman supra note 4 at 1901-2.

subordinate to tort claims one would have to identify some failure of the market process through which such financing is obtained.

C. PIERCING THE CORPORATE VEIL FOR INADEQUATE CAPITALIZATION

A rule allowing the corporate veil to be pierced[103] based on an adequate capitalization standard[104] is similar to unlimited liability in almost all respects and suffers from the same problems.[105] The main difference between the doctrine of unlimited liability and veil piercing is that while unlimited liability applies generally to all corporations at all times, veil piercing is done on a case by case basis. Clearly, introduction of the duty to capitalize reduces the need to rely on veil piercing. Yet this doctrine may complement the duty to capitalize in appropriate cases by attaching liability to shareholders in addition to managers.

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103. For discussion of this doctrine and its applicability in general see Stephen B. Presser, Piercing the corporate veil (1991); Clark, supra note 99, section 2.4; Krendl & Krendl, Piercing the Corporate Veil, 55 Denver L.J. 1 (1978); Barber, Piercing the Corporate Veil, 17 Willllamette. L. Rev. 371 (1981); F. Easterbrook & D. Fischel, supra note 18, at 54-60.

104. See also: Clark, supra note 47; Dix, Adequate Risk capital: the Consideration for the Benefit of Separate Incorporation, 53 NW. U. L. Rev. 478, 486-91 (1958); Leebron, supra note 7; but see R. Clark, supra note 99 §2.4.

105. See also: Hansman & Kraakman, supra note 4 at 1931-32; Clark, supra note 99, §2.4 at 71.

D. Minimum Capitalization Requirement

Establishment of minimum capitalization requirements for corporations in general also cannot by itself be considered as a comprehensive solution to the corporate tort problem.[106] The main deficiency of such a rule stems from the fact that it does not relate at all to the actual hazards associated with the activities of particular firms. Thus, although corporations will maintain the required level of capitalization, they will be induced to make the most of their capital by conducting more hazardous activities while taking sub-optimal precautions. The benefits associated with these activities accrue to shareholders, while the portion of damages created which exceeds the minimum capitalization level are externalized to tort victims.

Still, combined with other rules, minimum capital requirements may be warranted for corporations engaged in particular activities as a means of establishing a threshold for access to such activities.[107] Preset capitalization levels may also be used in conjunction with the duty to capitalize as guidelines for determination of adequate capitalization. For example, it is possible to create a prima facie presumption that capitalization at the average industry levels is adequate, and to place the burden of proof of the opposite on the claimants.[108]

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106. For additional criticism of this rule see Hansman & Kraakman, supra note 4 at 1927-28, but see also Grundfest supra note 9 at 421-3.

107. Grundfest, Supra.

108. See sections II(C)(2) and (3) above.

V. CONCLUSION

Any attempt to deal with the corporate tort problem is bound to be costly. In dealing with this problem the objective should therefore not be to cause corporations to always be able cope with all tort damages they may cause but to induce them to maintain a socially optimal wealth constraint by optimizing the amount of capital they maintain while taking into account all relevant costs, including tort liability costs.

The main proposition offered here is that the duty to capitalize is a relatively cost effective solution which comes close to achieving this objective. Introduction of the duty does not necessitate an all out restructuring the corporate form and of the way financial markets operate. Implementation of the duty is feasible also because of the possibility to apply it gradually. The duty can be restricted initially to corporations conducting certain disfavored activities which are associated with relatively low social benefit. In addition, it can initially be based on a very low adequate capitalization standard which may gradually be raised over time as more information about its costs and benefits is accumulated.

Managerial liability under the duty to capitalize makes sense for both close and public corporations. When a close corporation is formed attaching liability to managers will result in most cases in capturing shareholders as well. However, as the corporation grows and the group of managers becomes more and more distinct from shareholders the duty follows managers rather than shareholders, thereby avoiding many of the problems associated with attaching open ended liability to large passive group of holders of liquid equity securities.