Articles

The Limited Future of Unlimited Liability: A Capital Markets Perspective

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INTRODUCTION

Traditional arguments in favor of limited liability for corporate shareholders have come under fire.¹ Under the doctrine of limited liability, if a judgment is rendered against a corporation in an amount that exceeds its ability to pay, judgment creditors cannot pursue the corporation's shareholders to collect the

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1. Among the more recent works reexamining the theoretical bases for limited liability and the practicality of alternative liability regimes are PHILLIP I. BLUMBERG, *THE LAW OF CORPORATE GROUPS: SUBSTANTIVE LAW* 681-92 (1987); FRANK H. EASTERBROOK & DANIEL R. FISCHEL, *THE ECONOMIC STRUCTURE OF CORPORATE LAW* 40-62 (1991); Phillip I. Blumberg, *Limited Liability and Corporate Groups*, 11 J. CORP. L. 573 (1986); George W. Dent, Jr., *Limited Liability in Environmental Law*, 26 WAKE FOREST L. REV. 151 (1991); Frank H. Easterbrook & Daniel R. Fischel, *Limited Liability and the Corporation*, 52 U. CHI. L. REV. 89 (1985) [hereinafter Easterbrook & Fischel, *Limited Liability*]; Henry Hansmann & Reinier Kraakman, *Toward Unlimited Shareholder Liability for Corporate Torts*, 100 YALE L.J. 1879 (1991); David W. Leebron, *Limited Liability, Tort Victims, and Creditors*, 91 COLUM. L. REV. 1565 (1991); Jonathan R. Macey and Geoffrey P. Miller, *Double Liability of Bank Shareholders: History and Implications*, 27 WAKE FOREST L. REV. 31 (1992); Mark J. Roe, *Corporate Strategic Reaction to Mass Tort*, 72 VA. L. REV. 1 (1986); Alan Schwartz, *Products Liability, Corporate Structure, and Bankruptcy: Toxic Substances and the Remote Risk Relationship*, 14 J. LEGAL STUD. 689 (1985); Susan Woodward, *Limited Liability in the Theory of the Firm*, 141 J. INSTITUTIONAL & THEORETICAL ECON. 601 (1985); Note, *Liability of Parent Corporations for Hazardous Waste Cleanup and Damages*, 99 HARV. L. REV. 986 (1986).

residual amount. Critics claim that this limitation on liability provides an incentive for excessive corporate risk-taking and unfairly limits recoveries by plaintiffs with valid claims, particularly victims of corporate torts.² This disenchantment has spawned a search for alternative liability regimes, and the search seems to have settled on proportionate liability as the most plausible substitute for the traditional limited liability rule.³

Under a proportionate liability rule, if a corporation lacks sufficient assets to satisfy third-party claims, claimants have the right to recover from each shareholder an amount proportionate to that shareholder's equity interest in the enterprise. For example, if a corporation is found liable for \$1.2 billion in tort damages but has assets of only \$200 million, an owner of one percent of the corporation's shares would be liable for one percent of the residual \$1 billion claim, or \$10 million. In contrast, the traditional limited liability rule protects shareholders from any liability for damages that cannot be recovered from corporate coffers, as long as there are no special circumstances that warrant "piercing the corporate veil."⁴

The asserted benefit of proportionate liability as applied to large publicly traded corporations⁵ is that it will cause stock prices to decline by amounts that reflect the perceived magnitude and probability of events that might expose shareholders to claims in excess of corporate assets.⁶ This decline in stock

2. See, e.g., Hansmann & Kraakman, *supra* note 1, at 1880-81; Leebron, *supra* note 1, at 1568. Advocates of limited liability recognize that these problems arise but argue that the benefits of limited liability generally exceed its costs. See, e.g., RICHARD POSNER, *AN ECONOMIC ANALYSIS OF LAW* § 14.5 (3d ed. 1986); Easterbrook & Fischel, *Limited Liability*, *supra* note 1, at 93-103.

3. Most notably, Henry Hansmann and Reinier Kraakman contend it is practical and desirable to abandon limited liability and instead to hold shareholders proportionately liable for claims that exceed corporate assets. They take issue with the dominant defense of limited liability, a critique of the informational requirements inherent in a joint and several liability rule, by arguing that none of these impediments applies to a rule of proportionate liability. "If there remain reasons for retaining the limited liability regime," Hansmann and Kraakman conclude, "the burden is on the proponents of that regime to provide a persuasive exposition of those reasons." Hansmann & Kraakman, *supra* note 1, at 1934. Hansmann and Kraakman recognize that in the case of firms with liquid, publicly traded shares, "a workable rule would call for a number of refinements." They assert, however, that "our preliminary sketch of a regime of unlimited liability suggests many of the appropriate adaptations." *Id.* at 1933.

Leebron provides more tempered support for a proportionate liability regime. Although he concludes that "[t]he case for limited liability of investors for the tort liabilities of corporations has been seriously overestimated," he recognizes administrative and diversification problems that can arise under a proportionate liability regime. Leebron therefore suggests that definitive conclusions about the desirability of proportionate liability for firms with publicly traded shares "must await further empirical and theoretical work on both the efficiency costs of limited liability and the diversification effects and transaction costs of unlimited liability." Leebron, *supra* note 1, at 1649.

4. See generally STEPHEN B. PRESSER, *PIERCING THE CORPORATE VEIL* (1991).

5. The analysis in this Article is limited to corporations with actively traded shares that can support the arbitrage transactions described below. Under current market conditions, these equities are likely to be publicly traded, but it is theoretically possible for private over-the-counter markets to develop sufficient liquidity to sustain the arbitrage for issuers whose equity securities are not registered for trading in public markets. See, e.g., *SEC Agrees to Propose Rule Changes Expanding Shelf Registration, Rule 144A*, 24 Sec. Reg. & L. Rep. (BNA) 1059 (July 17, 1992) (discussing potential for organized, liquid trading markets for certain privately placed securities).

6. As Hansmann and Kraakman explain, "[i]f shareholders faced full liability for potential tort losses, share prices would incorporate available information about the full extent of these possible losses." Hansmann

prices, the reformers argue, will give corporate managers powerful incentives to engage in less risky conduct or to purchase additional corporate insurance.⁷ In addition, shareholders will have an incentive to purchase "portfolio insurance" to protect against their new financial exposure.⁸ The net result will be corporate decisionmaking that more accurately internalizes the risks posed by corporate conduct and leads corporations to adopt a higher, socially preferable standard of care. Proponents also argue that such a scheme will yield more adequate and equitable compensation to victims of corporate wrongs because a larger pool of assets will potentially be available to satisfy judgments that exceed corporate net worth.

Central to this argument is the assertion that proportionate liability will cause stock prices to decline in a manner rationally related to the business risks and capital adequacy, including insurance, of the underlying enterprise.⁹ If stock prices fail to respond as proponents predict, and additional assets do not become available for third-party claimants, then this link in the logical chain is broken. The argument that corporations will adopt a higher standard of care or purchase more insurance then unravels, as does the assertion that victims will be more adequately compensated. In other words, if capital markets fail to behave in the straightforward fashion assumed by proponents of proportionate liability, proportionate liability will not generate its intended benefits.

Proponents of proportionate liability have not, however, carefully examined the capital market's likely response to this legal regime. Capital markets are highly dynamic institutions.¹⁰ They can respond to proportionate liability by strategically generating a large clientele of investors who are de facto attachment-proof in actions seeking recovery of proportionate damages.¹¹ These attachment-proof investors can specialize in holding equity that is susceptible to third party claims under a proportionate liability regime. Meanwhile, potentially attachable

& Kraakman, *supra* note 1, at 1907. As a result, they claim, "[t]here is no doubt that unlimited liability . . . would increase the cost of equity. Indeed, the *purpose* of unlimited liability is to make share prices reflect tort costs." *Id.* at 1903. For his part, Leebron claims that "[a]doption of unlimited liability would have fairly precise financial consequences, to which investors could be expected to respond in rational and measured fashion." Leebron, *supra* note 1, at 1570. The advocates of proportionate liability entertain no doubts that their reform would cause predictable declines in the price of certain stocks.

7. Hansmann & Kraakman, *supra* note 1, at 1907-09.

8. This insurance would be offered to shareholders "to supplement the liability insurance carried by public corporations directly." *Id.* at 1901. This form of portfolio insurance should be distinguished from dynamic hedging strategies known by the same name, under which investors replicate put options by selling futures contracts or shares of stock when market prices decline. These dynamic hedging strategies were, fairly or not, blamed for contributing to the stock market crash on October 19, 1987. *See, e.g.*, DARRYL DUFFIE, *FUTURES MARKETS* 157-61, 290-96 (1989).

9. Leebron provides a detailed summary of the standard analysis used by proportionate liability advocates to suggest that stock prices will decline in a manner rationally related to the corporation's risks and assets. Leebron, *supra* note 1, at 1569-74.

10. *See, e.g.*, John D. Finnerty, *An Overview of Corporate Securities Innovation*, 4 J. APPLIED CORP. FIN. 23 (1992); Merton H. Miller, *Financial Innovation: The Last Twenty Years and the Next*, 21 J. FIN. & QUANTITATIVE ANALYSIS 459 (1986).

11. *See infra* Part I(B).

shareholders can specialize in holding equity that is relatively unlikely to generate proportionate liability exposure. Transactions in the futures, options, or swap markets can then reallocate equity market risk and return without shifting proportionate liability exposure, and thereby leave stock prices unchanged from prices that would prevail in a limited liability world.

The net result of this capital market activity would be a series of transactions arbitraging away the price effects of proportionate liability so as to yield the prices that would have prevailed under traditional limited liability. These arbitrage transactions would remove the price signals upon which reformers rely, insulate shareholders from any additional financial risk resulting from adoption of proportionate liability, and lead to no increase in the pool of assets potentially available to plaintiffs with claims in excess of corporate assets. Thus, a proportionate liability regime will be able to influence capital market prices only to the extent that transaction costs inhibit arbitrage transactions that synthesize limited liability pricing. The stock price effect of a proportionate liability rule can therefore never be greater than the transaction cost of the cheapest arbitrage that avoids liability generated by the rule.¹²

The implications of this analysis are not limited to the infeasibility of proportionate liability as a specific substitute for limited liability. *Any* shareholder liability rule that deviates from the currently dominant limited liability regime is subject to capital market arbitrage of the sort described in this Article. The focus on proportionate liability merely illustrates how such arbitrage functions. The argument presented here is thus a generic and pragmatic defense of limited liability against alternative regimes. Even if everyone agrees that reasons of equity or efficiency make it desirable to abandon limited liability, we cannot achieve that result for firms with liquid equity traded in a world with innovative capital markets and minimal transaction costs.

This Article also has broad implications for policy efforts to regulate economic behavior by influencing capital market prices. The analysis suggests that, because of the high degree of substitutability and low transaction costs that characterize modern capital markets, efforts to regulate behavior through the

12. The analysis in this paper assumes that the transaction costs of the arbitrage described herein are de minimis and also less than the stock price decline that would follow adoption of proportionate liability. Even if transaction costs are assumed to be substantial, the markets will be able to arbitrage away the effects of proportionate liability to the extent that transaction costs are lower than the private costs imposed by proportionate liability. Capital markets will respond as proponents of proportionate liability predict only if, and only to the extent that, arbitrage costs are greater than the private costs imposed by proportionate liability. Obviously, there are no empirical data quantifying the equity market price effects of a shift to a proportionate liability regime or the costs of arbitrage transactions that can avoid those price effects. But in light of the rapid innovation and internationalization of U.S. equity markets, see Finnerty, *supra* note 10; Joseph A. Grundfest, *Internationalization of the World's Securities Markets: Economic Causes and Regulatory Consequences*, 4 J. FIN. SERVICES RES. 349 (1990); Miller, *supra* note 10, even the most ardent advocates of proportionate liability cannot simply assert that capital markets will respond as they predict without giving far more attention to market mechanisms that can arbitrage away the effects of proportionate liability.

manipulation of financial market prices are often misguided and will generally fail to achieve their desired purposes.

Part I of this Article describes how modern financial markets can respond to proportionate liability with arbitrage transactions that leave the market price of publicly traded equities unchanged despite the shift to proportionate liability. These equilibria effectively synthesize limited liability pricing in a proportionate liability regime.

Corporations can help preserve limited liability pricing by reducing the float of equity potentially subject to proportionate liability claims. Corporations also can issue instruments priced as though they are limited liability equity but not treated as equity for legal purposes. Part II describes this corporate balance sheet response and its role in the arbitrage. In addition, intermediaries can, independent of any decision by corporate issuers, create equity-like instruments that are not subject to proportionate liability and thereby expand the pool of assets that can be invested in equity without becoming exposed to proportionate liability. Part III describes the role intermediaries can play in the arbitrage.

Part IV addresses the possibility that drafters of a proportionate liability rule will attempt to craft the rule broadly to prevent capital markets from synthesizing prices that would prevail under a limited liability rule. The analysis suggests that these rules would be difficult to design in theory and impossible to implement in practice. Prior attempts to discover such regulatory El Dorados have invariably ended in frustration and expense, and there is no reason to believe that this expedition would meet a happier fate. Part IV thereby argues that there is no such thing as a simple proportionate liability rule, and that any attempt to adopt such a rule would have to be accompanied by an armamentarium of collateral capital and product market regulations that would prove unwieldy, expensive, and unenforceable.¹³

More fundamentally, this Article illustrates a profound difference between modern capital markets and traditional markets for goods and services. Modern financial markets cross national borders with ease. Chameleon-like, they can generate novel instruments and transactions that capitalize on changes in legal regimes. To assume that capital markets will not respond to changes in tax regimes or liability rules by substituting away from penalized transactions is to assume a world that no longer exists. Part V suggests that we must employ great care in designing strategies that would influence economic behavior by forcing changes in the value of financial instruments. Given the structure of modern capital markets, strategies that affect the value of underlying productive

13. Henry Hansmann and Reinier Kraakman simply prove this point in their response following this Article. See Henry Hansmann & Reinier Kraakman, *Do the Capital Markets Compel Limited Liability? A Response to Professor Grundfest*, 102 YALE L.J. 427 (1992). To prevent the arbitrage transactions described in this Article, Hansmann and Kraakman suggest a companion set of complex restrictions on international capital flows that would prove impossible to implement and would add further costs to a proportionate liability regime.

activities are more effective than strategies that seek to influence or tax capital market transactions.

Finally, this Article concludes that advocates of proportionate liability are correct to criticize traditional arguments in favor of limited liability, but that proportionate liability is neither a practical nor a theoretically superior alternative for publicly traded corporations. To the extent that publicly traded corporations engage in excessive risk-taking because limited liability provides them with a shield, other policy tools—such as mandatory insurance, product safety requirements, and “gatekeeper” liability—are likely to be more equitable and effective. Capital markets cannot arbitrage away the incentives created by these rules, nor can foreign manufacturers or investors operating under different corporate liability regimes evade them as easily. These alternative strategies are therefore more likely to resolve the problems that limited liability creates—assuming that the problems are, in the first instance, large enough to warrant the costs and imperfections of intervention.

I. CAPITAL MARKET ARBITRAGE AND THE IRRELEVANCE OF PROPORTIONATE LIABILITY

The assumption that stock prices will decline to reflect the perceived probability and magnitude of events triggering liability in excess of corporate assets is central to the argument that proportionate liability will induce corporations to internalize costs that limited liability now enables them to avoid. It may be wrong, however, to assume this simple cause and effect relationship. If stock prices fail to decline in response to a shift to proportionate liability, there will be no price signal to trigger additional corporate risk avoidance or increased corporate insurance coverage.

At first blush, it seems counterintuitive to suggest that equity prices might not even flutter if proportionate liability becomes the law of the land. After all, equity prices are supposed to reflect a rational assessment of the likely returns from holding a security.¹⁴ If investors suddenly confront the possibility that stock ownership might create a liability, it seems reasonable to expect that they will demand additional returns to compensate for the new risk. By this logic, prices will have to decline to provide this increased return, which is precisely the effect that proponents of proportionate liability desire.¹⁵ Indeed, the vast event study literature would seem to support the conclusion that adoption of proportionate liability would result in the decline of certain stock prices.¹⁶

14. Leebron, *supra* note 1, at 1569-74.

15. See, e.g., Hansmann & Kraakman, *supra* note 1, at 1903.

16. See Eugene F. Fama, *Efficient Capital Markets: II*, 46 J. FIN. 1575, 1599-1602 (1991) (reviewing recent literature on event studies).

A. *Clientele Effects*

This argument, however, implicitly assumes that proportionate liability will not cause the emergence of a “clientele effect” in which a large and well-capitalized pool of de facto attachment-proof shareholders specialize in holding the equity of “risky” firms¹⁷ that might generate proportionate liability exposure. Investors who are not de facto attachment-proof would, in contrast, specialize in holding the shares of “safe” firms that are unlikely to generate such exposure. The result is a separating equilibrium in which no investor whose assets can be reached under a proportionate liability regime holds shares that could expose her to that risk. Transactions in the futures, options, and swaps markets could then rebalance investor portfolios without exposing any investor to proportionate liability. In the end, transaction costs in the capital markets might increase, but stock market prices would not fall to reflect the risks associated with proportionate liability.¹⁸

Clientele effects of this sort, along with their related separating equilibria, are not unusual in modern capital markets. The literature documents tax clienteles, dividend clienteles, and leverage clienteles in which some investors specialize in holding instruments that other investors specifically avoid.¹⁹ These clientele effects can be large, intricate and exotic, and easily cross national borders.

Through the late 1980’s in Japan, for example, government regulators required Japanese insurers who had contracted to make annual payments to whole

17. “Risk” in this sense refers to the possibility of an event that causes shareholder liability under a proportionate liability rule. This proportionate liability risk should be distinguished from “risk” in its more usual meaning, which refers to the expected volatility of an investment’s return, measured by variance or other higher moments of the probability distribution that describes the rewards of holding the security. See, e.g., EDWIN J. ELTON & MARTIN J. GRUBER, *MODERN PORTFOLIO THEORY AND INVESTMENT ANALYSIS* 98-99 (4th ed. 1991). The assumption that firms can be sorted into two categories of “risky” and “safe” enterprises is made solely for simplicity. Firms could also be ranked along a continuum of riskiness with the equity of riskier firms threatening to decline more in price and thereby being even more susceptible to market arbitrage.

18. Stock prices would fall only to the extent of the transaction costs inherent in the arbitrage that avoids liability. See *supra* note 12 and accompanying text.

19. See, e.g., Jaime C. Dermody & Eliezer Z. Prisman, *Term Structure Multiplicity and Clientele in Markets with Transactions Costs and Taxes*, 43 J. FIN. 893 (1988) (demonstrating possibility of multiple equilibria with strong clientele effects in the presence of transaction costs and taxes); Edwin J. Elton & Martin J. Gruber, *Marginal Stockholder Tax Rates and the Clientele Effect*, 52 REV. ECON. & STAT. 68 (1970) (exploring clientele effects that relate marginal shareholder tax brackets to corporate dividend policies); John M. Harris, Jr. et al., *Evidence of Financial Leverage Clienteles*, 38 J. FIN. 1125 (1983) (finding strong correlation between shareholder tax rates and financial leverage of firms with high debt-equity ratios); Wilbur G. Lewellen et al., *Some Direct Evidence on the Dividend Clientele Phenomenon*, 33 J. FIN. 1385 (1978) (displaying direct evidence of clientele effects); Robert H. Litzenberger & Krishna Ramaswamy, *The Effects of Dividends on Common Stock Prices: Tax Effects or Information Effects?*, 37 J. FIN. 429 (1982) (finding that common stock dividend yields suggest existence of tax-induced clienteles); Robert H. Litzenberger & Krishna Ramaswamy, *The Effect of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence*, 7 J. FIN. ECON. 163 (1979) (attributing correlation between dividend yield and returns on common stock to taxation effects); R. Richardson Pettit, *Taxes, Transactions Costs and the Clientele Effect of Dividends*, 5 J. FIN. ECON. 419 (1977) (attributing variability in dividend yields to tax effects and differences in time preferences).

life insurance policyholders to make those payments from current income, defined as the sum of dividends and interest.²⁰ The regulations prohibited insurers from using capital gains to make these payments. It would seem that this requirement could provide an incentive for Japanese insurers to hold high-dividend-paying shares which might affect pricing in Japanese equity markets. Japanese insurers, however, regularly avoided this consequence of domestic insurance regulation by purchasing large blocks of high-yield U.S. equities *cum dividend* (i.e., with the right to receive the dividend) and immediately reselling those blocks *ex dividend* (i.e., without the right to receive the dividend).²¹ A tax-exempt U.S. entity, indifferent between recognizing capital gains or dividend income, was the typical counterparty in these trades. Although the capital gains realized by the U.S. tax-exempt institution were approximately equal to the dividends foregone, the U.S. entity had an incentive to engage in the trade because the capital gains were recognized immediately, whereas the dividend would typically be received five weeks after the *ex dividend* date.

These Japanese insurance regulations generated billions of dollars in U.S. equity market transactions. Remarkably, dividend arbitrage trading of this sort accounted for more than twelve percent of average daily trading volume on the New York Stock Exchange (NYSE) in the second and third quarters of 1988.²² It constituted twenty-five percent or more of NYSE volume on some days.²³ This arbitrage activity has declined in recent years because Japanese authorities have amended their insurance regulations to eliminate insurers' incentives to engage in these dividend-stripping transactions.²⁴

20. Jennifer Lynch Koski, Nonstandard Settlement Trading On Ex-Dividend Days 8 (Jan. 1992) (unpublished manuscript, on file with author).

21. For example, suppose a stock pays a dividend of \$1 every quarter. Immediately prior to the dividend record date, the stock trades at \$100 per share *cum dividend*. Once the record date passes, purchasers acquire the share *ex dividend*, without the right to the \$1 dividend, even though the dividend is not actually paid until about five weeks after the record date. To simplify, assume that this stock's price is stable over time at \$100 *cum dividend* and approximately \$99 *ex dividend*. If a tax-exempt U.S. shareholder is able to sell this stock for \$100 *cum dividend* every quarter and then immediately repurchase it *ex dividend* for \$99, she earns \$1 per quarter in capital gains. Yet that investor remains a continuous holder of the issuer's shares—except for the instant when the stock passes from *cum dividend* status to *ex dividend* status. If a Japanese insurance company stands on the other side of each transaction and buys the stock for \$100 *cum dividend* and immediately resells it to the tax exempt institution for \$99 *ex dividend*, it can report receipt of a \$1 dividend which is offset by a \$1 capital loss on the purchase and sale of the underlying shares.

The net financial effect of the transaction is zero, but a dollar of capital loss in the U.S. exempt taxpayer's account has been transformed into a dollar of Japanese insurer dividend income that can be used to make payments to Japanese whole life policyholders. Reports suggest that in 1987 the College Retirement Equities Fund earned an additional \$11.7 million through such trading. George Anders, *Seizing Stocks: Japanese Players Grab Big Dividend Income in Latest Market Ploy*, WALL ST. J., May 20, 1988, at A1. For descriptions of more intricate dividend capture strategies, see Beatrice E. Garcia, *Trading to Nab Dividends Captures Investors' Fancy*, WALL ST. J., May 19, 1986, at A23, and Scott McMurray, *Risky Dividend-Capture Strategy Entails Buying 7 Issues and Selling Index Futures*, WALL ST. J., Apr. 27, 1987, at B40.

22. Anders, *supra* note 21.

23. On May 16, 1988, dividend capture trading in GTE stock alone accounted for 48 million of the 155 million shares traded on the NYSE that day, or 31% of NYSE volume. *Id.*

24. William Power & Michael R. Sesit, *Mania for Dividend Captures Subsides*, WALL ST. J., May 12, 1989, at C1. Hansmann & Kraakman, *supra* note 13, at 434 n.21, suggest that Japanese regulators could have easily prevented issuers from "evading capital requirements by buying dividends" through these recapture

B. Attachment-Proof Investors

Just as capital markets were able to arbitrage away the effects of Japanese insurance regulations through tens of billions of dollars worth of trades on the NYSE, they will be able to do the same for proportionate liability if this new regime threatens to have a meaningful impact on equity prices. For the market to avoid the price consequences of proportionate liability through arbitrage, a class of shareholders must evolve having substantial investable wealth without having assets that plaintiffs could reach under a regime of proportionate liability. Such a clientele is likely to emerge because of the constitutional and practical problems that would arise from efforts to collect proportionate liability judgments from domestic or foreign shareholders of firms lacking the assets to satisfy judgments.

A proportionate liability regime can be adopted at either the state or the federal level.²⁵ If proportionate liability is adopted at the state level, constitutional limitations would severely restrict the ability of state courts and federal courts, sitting in diversity jurisdiction, to assert jurisdiction over out-of-state shareholder defendants in proportionate liability actions. As Professor Janet Cooper Alexander cogently explains, the simple passive ownership of stock in a corporation that commits a tort cannot satisfy the minimum contacts test for assertion of jurisdiction. This holds true even if the tort occurs in the forum state,²⁶ the corporation is incorporated in the forum state,²⁷ and the shareholders derive economic benefit from the corporation's activity in the forum state.²⁸

transactions. The requirement that annual payments be made from current income is not, however, a capital requirement because it does not require that the insurer maintain any particular amount of capital. It is, instead, a restriction on the size of aggregate payments that is keyed to the size of dividend and interest income. As such, the restriction has nothing to do with capitalization requirements because an insurer can be either over or undercapitalized while paying out more or less than its dividend and interest income. Contrary to Hansmann and Kraakman's suggestion, the Japanese dividend recapture experience thus implies nothing about the futility of net capital requirements that actually require the possession of positive net assets. As for regulatory strategies that could have made recapture transactions impractical, it is certainly possible to speculate endlessly about such techniques, but Hansmann and Kraakman's suggestion that a six-month holding period would prevent avoidance of the rule is incorrect. Insurers would then not rely on dividend recapture strategies but could, instead, specialize in holding the shares of high-yielding stocks and swap out equity returns with other investors, thereby achieving the same results with possibly higher transaction costs. See *infra* Part I(E); see also Robert H. Litzenberger, *Swaps: Plain and Fanciful*, 47 J. FIN. 831, 843-44 (1992) (describing recent transactions in which Japanese insurers have turned to swap market to generate additional current income). No doubt, new rules could be written to strengthen the restriction, and new transactions could be invented to work around these new rules. See *infra* Part IV. Japanese authorities, however, adopted a wiser path. Rather than add new regulatory restrictions to defend a rule that is difficult to enforce and serves little legitimate purpose in modern markets, they effectively eliminated the need to engage in this fundamentally pointless financial engineering.

25. Hansmann and Kraakman argue that proportionate liability should be adopted at the state level. Hansmann & Kraakman, *supra* note 1, at 291-22. Other commentators do not address this question and appear to assume that proportionate liability can be adopted at the federal level.

26. Janet Cooper Alexander, *Unlimited Shareholder Liability through a Procedural Lens*, 106 HARV. L. REV. (forthcoming Dec. 1992).

27. *Id.*

28. *Id.* (citing *World-Wide Volkswagen v. Woodson*, 444 U.S. 286 (1977)).

For jurisdiction to lie, the corporation's shareholders would probably have to be subject to personal service in the forum state, reside in the state, engage in continuous and substantial business dealings in the state, or have litigation-related contacts with the forum state.²⁹ Because of these constitutional limitations, only a fraction of any corporation's shareholders would be subject to excess liability in any given state, and that fraction would depend on random factors, such as the locus of the specific tort at issue and the residences of each of the corporation's shareholders.³⁰ Moreover, because it would be against a state's self-interest to make its residents liable for torts while residents of other states could readily avoid jurisdiction, the prospect that proportionate liability would be adopted at the state level seems doubtful.³¹

Although a federal proportionate liability statute could likely avoid these constitutional impediments, it would not enable U.S. courts to assert jurisdiction over foreign shareholders and it could not overcome a variety of practical problems that plaintiffs would encounter when seeking to collect proportionate liability judgments.³² Even if plaintiffs were able to obtain a judgment against a corporation for an amount in excess of the corporation's assets, multiple collection proceedings would be necessary to pursue domestic shareholders for their proportionate liability. Domestic shareholders who were not parties to the original action might also seek to relitigate the tort liability issues in the context of any enforcement action.³³ If domestic shareholders defaulted in these proceedings, the plaintiffs would have to pursue individual shareholders to collect on the default judgments. These lawsuits would be numerous and costly,³⁴ and even the strongest proponents of proportionate liability recognize that "it is expensive to foreclose on a large class of small guarantors in case of default."³⁵

In particular, although some estimates indicate that institutional shareholders hold about half of the equity value of publicly traded U.S. corporations,³⁶ many of these holdings are nevertheless quite small in percentage terms. Relatively few institutions hold as much as one percent of any issuer's shares.³⁷ Other

29. *Id.*

30. *Id.*

31. *Id.*

32. *Id.*; see Lea Brilmayer & Charles Norchi, *Federal Extraterritoriality and Fifth Amendment Due Process*, 105 HARV. L. REV. 1217 (1992).

33. Alexander, *supra* note 26.

34. *Id.*

35. Henry Hansmann, *Ownership of the Firm*, 4 J. L. ECON. & ORG. 267, 282 (1988) (citation omitted).

36. CENTER FOR LAW AND ECONOMIC STUDIES, COLUMBIA UNIVERSITY SCHOOL OF LAW, INSTITUTIONAL INVESTORS AND CAPITAL MARKETS: 1991 UPDATE (1991) (Table 10) (finding that as of year-end 1990 public and private pension funds, bank trusts, mutual funds, insurance companies, foundations, and endowments owned 53.3% of equity in U.S. corporations).

37. "Holdings are highly concentrated in the largest institutions," and after considering the holdings of the largest twenty institutional investors, "concentration in institutional ownership falls off dramatically." Carolyn Kay Brancato, *Institutional Investor Concentration of Economic Power: A Study of Institutional Holdings and Voting Authority in U.S. Publicly Held Corporations* 7, 8 (Oct. 1991) (Part I: Top 25 U.S. Corporations as of December, 1990), in *Shareholder Rights: Hearing before the Subcomm. on Securities of the Senate Comm. on Banking, Housing and Urban Affairs*, 102d Cong., 1st Sess. 287-88 (1991).

calculations have found households "the largest single direct holders of equities," owning approximately \$2.3 trillion, or fifty-three percent, of equity securities valued as of year-end 1990.³⁸ The median value of portfolios held by America's 51.4 million shareholders is \$11,400 with an average of 3.2 issues per portfolio.³⁹ For small individual and institutional holdings, even proponents of proportionate liability recognize that collection efforts would not be worthwhile for many plaintiffs.⁴⁰ Shareholders with sufficiently small holdings, whether individual or institutional, are therefore naturally immune to the potential risks of proportionate liability. In addition, if the incentives were sufficiently powerful, the market could easily reallocate holdings in risky issues from larger to smaller positions, thereby placing a greater portion of a corporation's shares beyond any plaintiff's practical reach.⁴¹

The problem of collecting proportionate liability judgments from smaller domestic shareholders pales in comparison to the challenge of asserting jurisdiction over foreign shareholders of U.S. corporations and then attaching their assets. The Supreme Court has made it substantially more difficult to acquire jurisdiction over foreign defendants than over U.S. citizens. Even when the constitutional requirement of minimum contacts is satisfied—a finding that will be difficult to support for many foreigners who are merely passive shareholders—the Court has looked to principles of international comity before asserting jurisdiction over foreigners.⁴² The Court has warned that "[g]reat care and reserve should be exercised when extending our notions of personal

38. Jeffrey M. Schaefer et al., *1991-The Start of a New Era? The Flow of Funds: 1980-91*, 28 SEC. INDUS. TRENDS 1 (1992).

39. NEW YORK STOCK EXCHANGE SHAREOWNERSHIP 19 (1990).

40. Hansmann & Kraakman, *supra* note 1, at 1900; Leebron, *supra* note 1, at 1611.

41. In arguing that proportionate liability could effectively reach many shareholders, Hansmann and Kraakman reason by analogy to the "double liability" system prevailing in the banking system between the Civil War and the Great Depression. Hansmann & Kraakman, *supra* note 13, at 431 n.12. Under that system, the receiver of a failed bank would assess shareholders "for an amount up to and including the par value of their stock." Jonathan R. Macey & Geoffrey P. Miller, *Double Liability of Bank Shareholders: History and Implications*, 27 WAKE FOREST L. REV. 31, 31 (1992). If that system succeeded, they argue, then proportionate liability could also succeed.

The double liability banking system, however, existed at a time when capital markets were far less developed, and shares were held by much smaller numbers of holders who often tended to reside in the local community. Even so, only "about half the assessed amounts were collected." *Id.* at 34. Further, much of the success of the double liability system was attributable to the fact that bank managers, who also owned substantial amounts of bank stock, "apparently wished to wind up the affairs of their institutions before insolvency in order to avoid assessment." *Id.* But if modern corporate managers have relatively small holdings, as is often the case, the incentive for care in modern markets would be weaker than it was in the banking industry earlier this century. The direct threat of financial loss to managers as a result of assessment is also more akin to a "gatekeeper" strategy in which management is forced to pay a penalty in the event of insolvency. See *infra* text accompanying notes 140-144. Thus, whatever the historic success of double liability in the banking system, it is a weak analogy at best for proportionate liability in modern capital markets involving millions of shareholders in domestic as well as foreign transactions.

42. Alexander, *supra* note 26.

jurisdiction into the international field."⁴³ Thus, the prospects for asserting jurisdiction over foreign shareholders are not encouraging.

Even if jurisdiction over a foreign shareholder could be established, however, enforcing a judgment against her could prove an impossible task. Simply identifying foreign shareholders and locating their assets can be daunting.⁴⁴ Moreover, there is reason to believe that foreign courts might not enforce U.S. judgments abroad. Some countries may not recognize default judgments; some will only enforce a foreign judgment that is consistent with the judgment that would have resulted under their own choice of law rules; and some reserve the right to review the merits of foreign judgments.⁴⁵ In addition, the cost of pursuing shareholders abroad will be substantially greater than the cost of pursuing domestic shareholders.

The challenges created by foreign shareownership should not be minimized, particularly in today's highly internationalized capital markets. Recent data establish that foreigners are able quickly to increase their holdings of U.S. equities just as U.S. investors are able easily to move their investments abroad. In 1989, aggregate foreign purchases and sales of securities in U.S. markets amounted to \$416.3 billion.⁴⁶ These investment flows grew at a cumulative average annual growth rate of 21.0% through the 1980's, causing the volume of international securities transactions in U.S. markets to more than quintuple from its 1980 level of \$75.1 billion.⁴⁷ U.S. transactions in foreign securities

43. *Asahi Metal Indus. Co. v. Superior Court*, 480 U.S. 102, 115 (1987) (quoting *United States v. First Nat'l City Bank*, 379 U.S. 378, 404 (1965) (Harlan, J., dissenting)).

44. Identifying foreign owners can be virtually impossible when ownership must be traced through bearer shares, such as those issued by Liechtenstein Anstalts, or when ownership is held through accounts in jurisdictions with bank secrecy laws. See, e.g., INGO WALTER, *THE SECRET MONEY MARKET* 185-237 (1990) (emphasizing use of secrecy jurisdictions as means of avoiding detection and enforcement); Marc C. Corrado, Comment, *The Supreme Court's Impact on Swiss Banking Secrecy: Societe Nationale Industrielle Aerospatiale v. United States District Court*, 37 AM. U. L. REV. 827, 829-31 (1988) (reviewing Swiss domestic policy rationales for bank secrecy); Michael Getler, *Europe's Ultimate Tax Haven*, WASH. POST, Jan. 15, 1978, at H5; *Liechtenstein; Coming Clean*, ECONOMIST, Apr. 26, 1980, at 59; Steve Lohr, *Where the Money Washes Up*, N.Y. TIMES, Mar. 29, 1992, at 27 (Magazine); John Wicks, *A Tax Haven Where Companies Outnumber the Population*, FIN. TIMES, Aug. 24, 1984, at 8. To deal with the challenges posed by foreign ownership and trading, the U.S. Securities and Exchange Commission has negotiated an intricate web of treaties and memoranda of understanding. See, e.g., Richard M. Phillips & Gilbert C. Miller, *The Internationalization of Securities Fraud Enforcement in the 1990s*, 25 REV. SEC. & COMMODITIES REG. 119 (1992). It is highly doubtful that foreign jurisdictions would be as accommodating to U.S. enforcement efforts seeking to expose a potentially large number of passive foreign shareholders to liability as they are when U.S. authorities pursue only a small number of foreign investors based on evidence of direct individual wrongdoing in U.S. securities markets.

It is also no easy matter to identify shareholders within the United States because of the widespread use of nominees, trusts, and "street name" ownership. See, e.g., JAMES E. HEARD & HOWARD D. SHERMAN, *CONFLICTS OF INTEREST IN THE PROXY VOTING SYSTEM* 74 (1987) ("Street name registration makes it difficult for companies to identify who their beneficial owners are."); BETTY LINN KRIKORIAN, *FIDUCIARY STANDARDS IN PENSION AND TRUST FUND MANAGEMENT* 92 (1989) ("Part of the difficulty in obtaining shareholder information stems from the system . . . of having securities held in nominee name in central securities depositories. . . . Often these legal owners are not the beneficial owners of the stock."); see also 17 C.F.R. §§ 240.14a-1, 240.15a-2 (1992).

45. Alexander, *supra* note 26.

46. Grundfest, *supra* note 12, at 353.

47. *Id.*

markets grew at an even faster pace. In 1989, aggregate U.S. purchases and sales of foreign securities amounted to \$230.3 billion.⁴⁸ These investment flows grew at a cumulative average annual growth rate of 32.8% through the 1980's, causing the volume of U.S. transactions in international markets to increase more than twelve-fold from its 1980 level of \$17.9 billion.⁴⁹

Foreign capital would be able to enter U.S. markets quickly and easily to take advantage of any opportunities created by the adoption of proportionate liability, and domestic capital would be invested in foreign vehicles that purchase domestic U.S. securities or are otherwise immune to proportionate liability judgments. Each of these investment pools would be difficult or impossible for plaintiffs to reach in their efforts to enforce proportionate liability judgments, assuring the existence of a large and elastic class of investors who are attachment-proof in U.S. proportionate liability proceedings.

C. *An Example of Liability Arbitrage*

The existence of a large and expandable pool of assets in the hands of attachment-proof investors (also called "remote" investors because their assets are, as a practical matter, out of the reach of proportionate liability claimants) has profound implications for the viability of a proportionate liability rule.⁵⁰ Simply put, the presence of these investors means that the introduction of proportionate liability may not change equity prices at all. If equity prices do not change, corporate managers have no incentive to adopt a greater standard of care and the efficiency rationale for the change to a proportionate liability regime crumbles.

Capital markets can neutralize the price effects of proportionate liability by combining a simple clientele effect with a series of derivative market transactions. Consider, for example, an economy whose outstanding equity has an aggregate market value of \$1 trillion prior to the adoption of a proportionate liability rule. Of this amount, \$750 billion represents the equity market capitalization of firms for which there is no perceived ex ante risk of shareholders being held proportionately liable. These safe firms might engage in relatively nonhazardous activities, like software programming. Alternatively, they might engage in dangerous activities, such as chemical manufacturing, but have assets or insurance sufficiently large that shareholders perceive no additional risk from holding these shares even under a proportionate liability regime. The remaining

48. *Id.* at 357.

49. *Id.*

50. The suggestion that "[u]nder a pro rata rule, shares would have the same expected value for all shareholders," Hansmann & Kraakman, *supra* note 1, at 1903, is central to the argument in favor of proportionate liability. The presence of remote investors suggests that this assertion is incorrect because remote investors have an incentive to value risky shares differently from investors who might be held proportionately liable.

\$250 billion represents equity in risky firms for which there is a perceived danger that shareholders might be held proportionately liable.⁵¹ Suppose also that remote investors have equity market assets of at least \$250 billion.⁵² The remaining \$750 billion of equity market valuation is held by attachable shareholders whose assets can be reached for damage awards in proportionate liability actions, if sufficient liability develops.

If the price of the \$250 billion in equity securities issued by risky firms begins to decline, remote investors will have an incentive to specialize in holding these risky shares. After all, as the price of these securities declines, shareholders will be able to purchase at discounts that do not expose them to proportionate liability. In the extreme, these remote investors can hold *all* \$250 billion worth of equity in risky firms while assessable investors specialize in holding the \$750 billion of equity in safe firms.

If all safe firms were otherwise identical to all risky firms then each portfolio would replicate the other and the overall market. Under these special circumstances, no investor's portfolio would become unbalanced and stock prices would not change if the legal rule shifted from limited to proportionate liability.

This is, however, an unrealistic scenario.⁵³ Equity in safe issuers is likely to differ systematically from equity in risky issuers because the firms are likely to have very different economic characteristics. The strict separation of safe equity in the hands of shareholders with attachable assets and risky equity in the hands of remote shareholders will therefore cause both clienteles to find themselves holding unbalanced portfolios. Remote investors who hold only risky stocks in their portfolios will want to diversify by adding returns from safe stocks while simultaneously reducing their risky stock exposure. Similarly, attachable investors who have only safe stocks in their portfolios typically will want to hold both safe and risky stocks, but without the proportionate liability exposure that arises from holding shares in risky issuers. The problem, then, is how to

51. "Risky" here refers solely to the exposure that results from the adoption of proportionate liability and not to elements of investment risk that also exist under limited liability regimes. *See supra* note 17.

52. This assumption is not strictly necessary. In a model with heterogeneous expectations, remote investors could have assets less than the total market value of risky equity securities and, provided that they remain the marginal shareholders at risky firms, market prices would not reflect any change as a result of the adoption of proportionate liability. *See infra* Part III.

53. Hansmann and Kraakman suggest that a well-diversified portfolio can be created with only securities of risky firms. Hansmann & Kraakman, *supra* note 13, at 429 n.7. The complement of this assertion is that well-diversified portfolios can also be created with only securities of safe firms. Although the arbitrage suggested in this Article would be even easier if this assertion is true, the assertion seems counterintuitive. For example, chemical, petroleum, cigarette, and pharmaceutical firms are, as a class, more likely to fall in the risky category than in the safe category. Elimination of these entire sectors from an equity portfolio would unbalance it by excluding key cyclical firms, removing an element of oil price sensitivity, excluding an historically stable source of cash flow from the cigarette industry, and eliminating opportunities to gain from the development of new pharmaceutical technology. *See, e.g.*, RICHARD A. BREALEY & STEWART C. MYERS, *PRINCIPLES OF CORPORATE FINANCE* 172-73 (4th ed. 1991) (chemical companies have high sensitivity to inflation, and elimination of chemical companies from assessable shareholders' portfolios would then unbalance them with respect to inflation risk as well as to industry-specific risk).

attain this diversification without upsetting the separation that prevents attachable investors from holding risky shares.

Both clienteles can satisfy their diversification demands through futures, swaps, and options transactions. These derivative market transactions can also act as conduits for price information, so that even if the expectations of remote shareholders differ significantly from the expectations of attachable shareholders, final equilibrium market prices will reflect the aggregate expectations of all market participants and will thereby replicate prices that would exist under limited liability.⁵⁴ Although the capital markets can craft a wide array of transactions that can achieve this result, a discussion of simple futures, swaps, and options transactions adequately illustrates the market's ability to shift risks so that, through arbitrage, the price consequences of proportionate liability are eliminated.

D. Rebalancing Through Futures Market Transactions

Futures markets can define contracts with values that are indexed to separate portfolios of safe and risky shares.⁵⁵ The holder of a futures contract indexed to the value of a portfolio of risky shares holds no equity in the issuers whose securities constitute the index.⁵⁶ Accordingly, the holder of a futures contract cannot be reached under a rule of proportionate liability.

Remote investors who have too many risky shares in their portfolios relative to their desired equilibrium allocations can rebalance their initial portfolios by purchasing futures contracts on a safe share index while simultaneously selling futures contracts on a risky share index. Remote investors will thus simultan-

54. The suggestion that the market's ability to reconstruct balanced portfolios "is largely irrelevant," Hansmann & Kraakman, *supra* note 13, at 428, misses the point. By reconstructing balanced portfolios, the market synthesizes pricing that would exist under a limited liability regime and thereby neutralizes any incentive effects that might result from a shift to proportionate liability. If the markets did not have this ability, then a shift to proportionate liability could have a price effect even if there existed a large class of non-assessable shareholders.

55. Futures contracts are already available on a wide range of U.S. equity indexes, including the Standard & Poor's 500, the Standard & Poor's Mid-Cap Index, the New York Stock Exchange Composite Index, the Major Market Index, and the Value Line Index. *Futures Prices*, WALL ST. J., June 18, 1992, at C14. Futures contracts can readily be created for other broad-based indexes, and also can be used to create global synthetic index funds. See BRIAN BRUCE & ANNE EISENBERG, CHICAGO MERCANTILE EXCHANGE, THE CME FINANCIAL STRATEGY PAPER: GLOBAL SYNTHETIC INDEX FUNDS (1992). However, futures contracts on the shares of individual issuers are illegal in the United States. Thomas A. Russo & Marlisa Vinciguerra, *Financial Innovation and Uncertain Regulation: Selected Issues Regarding Product Development*, 69 TEX. L. REV. 1431, 1457 (1991) (The Commodities Exchange Act, § 2(a)(1)(A), 7 U.S.C. § 2 (1988), "prohibits the offer or execution of futures contracts on individual securities, except individual securities that are 'exempted' and are not municipal securities," as defined in § 3 of the Securities Act of 1933, 15 U.S.C. § 77c (1988), and in § 3(a)(12) of the Securities Exchange Act of 1934, 15 U.S.C. § 78c(a)(12) (1988)). As a practical matter, this rule prohibits the trading of futures on individual equity securities in U.S. capital markets. *Id.* Investors who want to use U.S. markets to shift proportionate liability risk in individual securities, or in nonstandard portfolios on which futures are not traded, will have to engage in over-the-counter swap or option contracts. See *infra* Part I(E)-(F).

56. *Chicago Mercantile Exch. v. SEC*, 883 F.2d 537, 545 (7th Cir. 1989) (futures are not equity interests in shares that constitute the index), *cert. denied*, 496 U.S. 936 (1990).

eously “go long” futures on the index of safe shares and “go short” the equivalent value of futures on the index of risky shares. These simultaneous transactions will reduce the remote investors’ exposure to risky equity and expand their exposure to safe equity, thereby duplicating the allocations that would exist in a limited liability world while maintaining strict separation in the equity market.

In contrast, attachable shareholders will rebalance their initial portfolios by going long futures on the index of risky shares and going short the equivalent value of futures on the index of safe shares. Through these derivative market transactions, attachable shareholders will expand their exposure to risky shares and reduce their exposure to safe shares, again maintaining strict separation in the equity market and not exposing themselves to proportionate liability.

In this set of transactions, remote shareholders will want to buy the safe share exposure that attachable shareholders want to sell. Remote shareholders are natural longs for safe share futures while attachable shareholders are natural shorts in the same market. Conversely, remote shareholders will want to sell the risky share exposure that attachable shareholders want to buy, making remote shareholders natural shorts for risky share futures and attachable shareholders natural longs in the same market. Each party to the transaction is able to bargain for the price she thinks each index is worth, and each clientele thereby conveys its price expectations to the market segment in which it holds no shares.⁵⁷ Adoption of a proportionate liability rule will thus have no price effect in the market.

E. *Rebalancing Through Swaps Market Transactions*

In order to understand the simplest of equity market swap transactions, consider a remote shareholder who holds a portfolio of risky shares and an attachable shareholder who holds a portfolio of safe shares. These two investors would be able to balance each other’s portfolios and replicate the aggregate market portfolio simply by entering into a swap arrangement whereby the remote investor agrees to convey to the attachable investor the returns on a portion of his risky portfolio. In return, the attachable investor agrees to convey the returns on a portion of his safe portfolio to the remote investor. Investors do not have to buy or sell stocks in this arrangement because they all agree to exchange a portion of the net gains or losses that result from holding their respective underlying equity positions.⁵⁸

57. REPORT OF THE PRESIDENTIAL TASK FORCE ON MARKET MECHANISMS 55-57 (1988) (describing mechanics of such price transmission). “[W]hat may appear superficially to be three separate markets—for stocks, stock options, and stock index futures—in fact behaves as one market.” *Id.* at 55.

58. See Henry T. C. Hu, *Swaps, The Modern Process of Financial Innovation and the Vulnerability of a Regulatory Paradigm*, 138 U. PA. L. REV. 333, 346-63 (1989) (providing general description of swap arrangements).

Thus, remote investors remain the sole owners of the risky shares and have no incentive to discount the value of these shares. This arrangement allows all investors to become fully diversified in the equity markets without exposing any attachable investors to the risk of proportionate liability. Equilibrium prices will again replicate prices under limited liability because, in both markets, all investors hold balanced portfolios and no investor is subject to the additional risk generated by proportionate liability.

The technology to support intricate swap transactions is commonplace among institutional investors. The aggregate swap market has exploded from a notional value of about \$1 trillion in 1987 to an estimated \$3-\$5 trillion as of early 1992.⁵⁹ Equity swaps have already been arranged on the basis of the Standard & Poor's 500 Index, the Tokyo Stock Price Index (TOPIX), the Nikkei 225, France's *Chamare des Agents de Change* (CAC) 240, Britain's Financial Times Stock Exchange (FTSE) 100, the Toronto Stock Exchange (TSE) 300, and other more specialized indexes.⁶⁰ Estimates peg the equity swaps market at \$125 billion as of year-end 1991,⁶¹ and there are press reports of a single \$500 million Nikkei swap.⁶² In addition, when market forces indicate a demand for swaps on indexes that do not yet exist, intermediaries quickly create indexes to satisfy that demand.⁶³ Equity swaps designed to reallocate the economic characteristics of separate portfolios of safe and risky shares are already well within the market's capabilities.

F. *Rebalancing Through Options Market Transactions*

Options markets can also be used to arbitrage around the effect of proportionate liability.⁶⁴ Investors can create shares of "synthetic stock" by properly

59. Daniel P. Cunningham, *Interest Rate and Currency Swaps and Related Transactions*, in *SWAPS AND OTHER DERIVATIVES IN 1992* at 9, 11-15 (PLI Corp. Law & Practice Course Handbook Series No. 778, 1992); Tracy Corrigan, *Techniques Find New Markets—Equity and Commodity Swaps*, *FIN. TIMES*, Mar. 19, 1992, at 38; William Glasgall & Bill Javetski, *Swap Fever: Big Money, Big Risks*, *BUS. WK.*, June 1, 1992, at 102; David Greising et al., *Has Chicago Lost Its Edge?*, *BUS. WK.*, Mar. 9, 1992, at 76.

60. Peter A. Abken, *Beyond Plain Vanilla: A Taxonomy of Swaps*, *ECON. REV.*, Mar.-Apr. 1991, at 12, 26-27; Richard Metcalfe, *Out of the Shadows*, *RISK*, Oct. 1990, at 40-42.

61. Claire Makin, *Hedging Your Derivatives Doubts*, *INSTITUTIONAL INVESTOR F.*, Dec. 1991, at 113.

62. Lillian Chew, *Unpicking Haute Couture*, *RISK*, Apr. 1992, at 21, 24.

63. See, e.g., Angelo A. Calvello, *Synthetic Equity*, *INSTITUTIONAL INVESTOR F.*, Nov. 1991, at 37 ("There appears to be no limit to the structure or coverage one can get with synthetic equities: Name an index or market sector, denominate it in the currency of your choice, and pick a term; someone will construct a product that meets your specifications."); Steven Dickson, *PSA Ready to Unveil Municipal Swap Index at April Conference*, *BOND BUYER*, Feb. 5, 1992, at 5 (Public Securities Association has developed new municipal index designed specifically for swap transactions to satisfy demand for more accurate pricing in municipal bond swap market); *Morgan Guaranty Grabs More Equity-Index Swaps Business With "AAA" Rating*, *SEC. WK.*, Sept. 2, 1991, at 3 ("key to the success of equity-index swaps is the ability to customize these products, often using . . . sub-indices, to meet the customer's needs").

64. Options can be written on indexes of portfolios of safe or risky shares or on individual safe or risky shares.

structuring the simultaneous purchase of a call option and sale of a put option.⁶⁵ The value of these synthetic stock positions will equal the value of the underlying shares independent of any proportionate liability effect because holders of synthetic equity are not shareholders in the issuer of the shares on which the options are written.⁶⁶ Remote investors can increase their exposure to safe shares by purchasing synthetic safe securities composed of combined long call and short put positions on safe shares. Meanwhile, attachable investors can go long in the market for synthetic risky securities by taking long call and short put positions on such shares. To shed exposure, remote investors will sell synthetic risky securities by entering into short call/long put positions on risky shares, while attachable investors will sell synthetic safe shares by entering into short call/long put positions on safe shares.

In this options market, attachable and remote investors are again natural longs and shorts for each others' positions because each set of investors wants to sell precisely the sort of equity market exposure the other wants to buy. This reciprocity suggests that the overall capital market equilibrium will incorporate the price information of both clienteles, and strict separation will be maintained in the equity market because no attachable investor will hold risky shares. Thus, equilibrium prices in this proportionate liability regime would again be identical to those in a limited liability regime.

G. *The Aggregate Effect of Arbitrage Activity*

The total separation of risky shares in the hands of remote shareholders, as just described, is a sufficient condition for capital markets to replicate limited liability pricing in a proportionate liability world. The necessary condition for replication is easier to satisfy: the marginal purchasers that set the market price for risky shares must be remote investors. In that event, the presence of attachable infra-marginal holders of risky shares will not cause market prices to deviate from the limited liability equilibrium because prices at the margin will continue to be set by investors who have no reason to discount equity values to reflect proportionate liability risk.⁶⁷

This condition is relatively easy to satisfy. If the populations of remote shareholders and shareholders with attachable assets are assumed to have identical distributions of heterogeneous expectations, remote shareholders will systematically be willing to pay more for equity in risky firms, both at the

65. See, e.g., THOMAS E. COPELAND & J. FRED WESTON, FINANCIAL THEORY AND CORPORATE POLICY 245-48, 322-24 (3d ed. 1988); JOHN C. COX & MARK RUBINSTEIN, OPTIONS MARKETS 41-43 (1985); WILLIAM F. SHARPE & GORDON J. ALEXANDER, INVESTMENTS 625-27 (4th ed. 1990).

66. The issuer of these options is typically a third party such as the Options Clearing Corporation. LOUIS LOSS, FUNDAMENTALS OF SECURITIES REGULATION 251 (3d ed. 1983).

67. Attachable shareholders might place higher-than-market values on risky shares if, for example, they had independent incentives to retain equity for antitakeover purposes, or because of tax considerations or reasons related to employment by the issuer.

margin and infra-marginally.⁶⁸ Thus, if an attachable shareholder is the marginal holder who sets the market price, that shareholder can be outbid by remote shareholders with otherwise identical expectations. They can also be outbid by attachable shareholders with identical expectations who simply shift their assets to a nonattachable form.⁶⁹

II. THE CORPORATE ISSUERS' RESPONSE

The market has an even greater ability to achieve a synthetic, limited liability equilibrium than has been described up to this point. As investors sort themselves into attachable and remote clienteles, issuers will have an incentive to respond to market signals by shrinking the pool of equity that is potentially subject to proportionate liability because capital in that form will become relatively more expensive. Similarly, market intermediaries can develop techniques for sterilizing potential proportionate liability exposure associated with holding risky shares, even if issuers do nothing to change the structure of their balance sheets. As the market moves to a new separating equilibrium that replicates limited liability pricing, the risky equity pool that must be segregated and held solely by remote investors will shrink while the ability of all investors to hold equity in non-attachable form expands.

Corporations' incentives and abilities to restructure their balance sheets in response to a proportionate liability rule are relatively straightforward. Corporations seek to minimize their total cost of capital as measured by the blended cost of debt and equity financing.⁷⁰ To the extent that a shift from limited to proportionate liability increases the cost of equity by depressing the value of an issuer's shares, the corporation has an incentive to restructure its balance sheet by substituting away from newly-expensive equity and raising capital in forms that are immune to proportionate liability judgments.⁷¹ This balance-sheet substitution can occur simultaneously with the emergence of a clientele effect, and the extent to which the market uses one technique or the other to arbitrage around proportionate liability will depend on the relative transaction costs. Moreover, the greater the extent to which issuers restructure their balance sheets to reduce the outstanding float of capital potentially subject to proportionate

68. This condition is satisfied because for every assessable shareholder with a given set of expectations about the value of a risky issuer's shares, there will be an attachment-proof shareholder with essentially identical expectations.

69. This can be accomplished, for example, by shifting from U.S. equities to foreign instruments that represent claims on U.S. equities. See, e.g., *infra* text accompanying note 93.

70. See, e.g., BREALEY & MYERS, *supra* note 53, at 189-91.

71. Although early research suggested that aggregate firm value is independent of the firm's financing decision, see Franco Modigliani & Merton H. Miller, *The Cost of Capital, Corporation Finance and the Theory of Investment*, 48 AM. ECON. REV. 261 (1958), more recent research recognizes that there is an optimal debt-equity mix and that a decrease in the cost of debt will cause a shift in capitalization away from equity. See, e.g., Sudipto Bhattacharya, *Corporate Finance and the Legacy of Miller and Modigliani*, 2 J. ECON. PERSP. 135 (1988).

liability claims, the easier it becomes for the market to synthesize limited liability pricing because a smaller percentage of outstanding securities will have to be isolated in the hands of attachment-proof investors in order to sustain the separating equilibrium.

Corporations already issue many instruments that can easily be used to raise capital without subjecting holders to a risk of proportionate liability. At the simplest level, corporations can issue additional debt in lieu of new equity or use the proceeds of a debt offering to repurchase outstanding equity shares. The debt can take the form of bank loans, bond issuances, or commercial funding through accounts payable, factoring of receivables, or other sources.⁷² As the corporation's debt-to-equity ratio increases, the corporation's junior debt will become increasingly risky and its pricing will come closer to the pricing of the issuer's equity shares.⁷³

Firms can also issue more complex financial instruments that are not equity for legal purposes though they are priced for financial purposes as though they have a significant equity component. A convertible bond, for example, is treated as "pure debt until conversion, after which it becomes an equity interest."⁷⁴ The issuer can make the prices of these bonds track the value of the issuer's equity more closely by reducing the price at which holders would want to convert into equity and by minimizing the differential between the bond's interest rate and the dividend paid on the equity into which the bond is convertible.⁷⁵ The market for convertible debt is already quite substantial, with more than \$57 billion outstanding as of March 1990.⁷⁶ An additional \$16.4 billion was issued in 1991 alone.⁷⁷

72. There is little doubt that corporate balance sheets respond to changes in the relative prices of debt and equity. Between 1984 and 1989, debt was substituted for equity at a furious pace, primarily because of tax-related incentives. During that period, net new equity issues declined at a rate of \$95.8 billion per year, with a reduction of \$130 billion in 1989 alone. Myron S. Scholes, *Stock and Compensation*, 46 J. FIN. 803, 806-07 (1991).

73. See generally FEDERAL RESERVE BANK OF BOSTON, ARE THE DISTINCTIONS BETWEEN DEBT AND EQUITY DISAPPEARING? (Richard W. Kopcke & Eric S. Rosengren eds., 1989).

74. BORIS I. BITTKER & JAMES S. EUSTICE, FUNDAMENTALS OF FEDERAL INCOME TAXATION OF CORPORATIONS AND SHAREHOLDERS ¶ 4.06 (1980). Holders of convertible bonds have debt claims on the corporations that are governed by the terms of the indenture. These investors step into the shoes of equity-holders, to whom corporate boards owe full fiduciary duties, only upon conversion. See *Broad v. Rockwell Int'l Corp.*, 642 F.2d 929, 958 (5th Cir. 1981) (compliance with terms of indenture discharges corporation's fiduciary duties to holders of convertible bonds), *cert. denied*, 454 U.S. 965 (1981); *Simons v. Cogan*, 542 A.2d 785, 788-91 (Del. Ch. 1987) (holders of corporation's convertible debt are not beneficiaries of fiduciary duties), *aff'd*, 549 A.2d 300 (Del. 1988).

75. If the equity features of convertible debt become too prominent, the taxing authorities may attempt to recharacterize the convertible debt as equity. CECIL WRAY, JR. & SUZANNE VEILLEUX, INNOVATIVE CORPORATE FINANCING TECHNIQUES A-12 (BNA Corp. Practice Series No. 48, 1986). For a discussion of the debt-equity characterization problem as it relates to proportionate liability, see *infra* text accompanying notes 105-110.

76. Kirby Freeman, *U.S. Corporate Finance—Convertible vs. Junk Debt*, REUTERS, Mar. 20, 1990, available in LEXIS, Nexis Library, Reuters File.

77. Vineeta Anand, *Convertible Issuance Soars As Rates Fall, Stocks Rise*, INVESTOR'S BUS. DAILY, Jan. 31, 1992, at 8. See also Jinny St. Coar, *Hybrid Security Comes to Life: 0-Coupon Convertibles Soar*, CORP. CASHFLOW, Sept. 1991, at 47.

Several newer and more exotic hybrid debt-equity instruments demonstrate the ease with which issuers can fashion instruments responsive to the capital market demands that proportionate liability would generate. For example, Liquid Yield Option Notes, or LYON's,⁷⁸ are zero-coupon bonds convertible into the equity of either the issuer or an affiliate of the issuer.⁷⁹ These instruments are particularly attractive to tax exempt institutional investors, who need not recognize original issue discount interest as it accrues and who may therefore be particularly attracted to LYON-like instruments with strong equity components.⁸⁰ Corporations could also raise capital by selling exchangeable debt having a value linked to the price of a different issuer or to the price of an index of equity shares. In such exchangeable debt offerings, Corporation A sells debt whose value depends on the price of Corporation B's shares⁸¹ or on the value of a stock index such as the Standard & Poor's 500.⁸² To the extent that these instruments are "cash settled" and never actually result in the receipt of an equity interest in any issuer, a corporation can raise capital by offering an equity-like risk without exposing investors to even the most remote danger of a proportionate liability judgment.

Corporations can also raise capital without subjecting investors to the risk of proportionate liability by selling warrants, subscription rights, and other instruments that give investors the right, but not the obligation, to purchase the issuer's shares in return for the payment of an exercise price.⁸³ Warrant holders are not equity holders, cannot vote in elections for the corporation's board, are not owed fiduciary duties by the corporation's board, and have none of the other incidents of shareownership.⁸⁴ Warrant holders are, instead, contractual claimants, and until they exercise the warrants' conversion-like features, they are not equity holders in the issuer.⁸⁵

78. Liquid Yield Option Note is a trademark of Merrill Lynch & Co. Financially identical instruments are marketed by other underwriters under other trade names.

79. Described more fully, these instruments are "zero coupon, convertible, callable, and puttable" bonds. John J. McConnell & Eduardo Schwartz, *The Origin of LYONs: A Case Study in Financial Innovation*, 4 J. APPLIED CORP. FIN. 40 (1992).

80. See BORIS I. BITTKER & JAMES S. EUSTICE, *FEDERAL INCOME TAXATION OF CORPORATIONS AND SHAREHOLDERS* ¶¶ 4.40 to 4.43 (5th ed. 1987) (analyzing original issue discount rules).

81. See, e.g., \$389,129,000, Sun Co., Inc., 10 3/4% Subordinated Exchangeable Debentures Due 1006, Exchangeable for Common Stock of Becton, Dickinson and Co. (Prospectus dated Apr. 10, 1981), reprinted in WRAY & VEILLEUX, *supra* note 75, at B-2601.

82. See, e.g., Finnerty, *supra* note 10, at 32; see also \$100,000,000 Salomon Inc. 2% Standard & Poor's 500 Index Notes ("SPIN") Due 1990 (Prospectus dated July 29, 1986) (Prospectus Supplement dated Aug. 21, 1986).

83. SHARPE & ALEXANDER, *supra* note 65, at 588-89.

84. Under Delaware law, the "option feature of [warrants] does not qualify for the protections that flow from a fiduciary duty . . . [because] an option to buy stock in the future does not make one an equitable stockholder." *Glinert v. Wickes Companies, C.A. No. 10407, 1990 WL 34703*, at *9 (Del. Ch. Mar. 27, 1990) (citing *Gamble v. Penn Valley Crude Oil Corp.*, 104 A.2d 257, 260 (Del. Ch. 1954)), *aff'd*, 586 A.2d 1201 (Del. 1990)). See also BREALEY & MYERS, *supra* note 53, at 536; cf. *Simons v. Cogan*, 549 A.2d 300 (Del. 1988) (no fiduciary duty to holders of convertible debentures).

85. See *Anadarko Petroleum Corp. v. Panhandle Eastern Corp.*, 521 A.2d 624, 630 (Del. Ch. 1987) (holding, by analogy to status of convertible security holders, that board owes no fiduciary duty to purchasers

Although warrant holders are not equity holders for legal purposes, the value of their investment can again be made to correlate very closely with the value of limited liability equity in the issuer. This is particularly easy for warrants that have low strike prices relative to the current price of the issuer's equity. These instruments will trade like "deep-in-the-money" call options, and their value will increase or decrease dollar-for-dollar with the value of traditional limited liability shares in the issuer.⁸⁶ Put another way, warrant holders can earn equity-like returns without assuming proportionate liability risks. Thus, investors will again be able to avoid proportionate liability at a relatively low cost, and the volume of equity that must be held by remote investors in order to avoid proportionate liability exposure can be substantially reduced.

III. THE INTERMEDIARIES' RESPONSE

The market need not rely solely on issuers to adjust their own balance sheets in response to the threat of proportionate liability. Intermediaries such as investment banks, commercial banks, and mutual funds can structure myriad instruments and transactions specifically designed to shield shareholder assets from proportionate liability claimants. Exchangeable securities are a particularly easy means by which third parties can synthesize limited liability valuations for the equity of risky issuers.⁸⁷ Through the use of third party exchangeable instruments, intermediaries can create situations in which a "safe" foreign issuer's debt instrument has a value that is highly contingent on the price of a "risky" domestic issuer's equity.

For example, Merrill Lynch recently structured a debt instrument issued by Finnish Export Credit with a value contingent on the price of Intel Corporation stock.⁸⁸ Holders of these bonds are doubly protected from any potential Intel-related proportionate liability risk. First, they are not equity holders in Intel; they are debt holders in a stranger to Intel. Second, the issuer of this instrument is a foreign entity, so that even if claimants sought to reach these debt holders, they would have to address the problem of asserting jurisdiction over lenders to a foreign entity. Foreign governments have also issued bonds and warrants

of when-issued shares and that such security holders have but "a contractual right to become a stockholder according to the terms of the governing instrument"), *aff'd*, 545 A.2d 1171 (Del. 1988).

86. See, e.g., VICTOR BRUDNEY & MARVIN A. CHIRELSTEIN, *CORPORATE FINANCE* 287-93 (3d ed. 1987).

87. See, e.g., Gregory K. Palm & Donald R. Crawshaw, *Recent Developments in Hybrid Instruments and Privately Issued Warrants*, in *NEW FINANCIAL INSTRUMENTS AND TECHNIQUES* 95 (Gregory K. Palm ed., 1990) (describing, among other instruments, Standard and Poor's Index Notes (SPIN's) that increase with value of the index, reverse SPIN's that increase if market index declines, and index warrants); see also Edward D. Kleinbard, *Equity Derivative Products: Financial Innovation's Newest Challenge to the Tax System*, 69 *TEX. L. REV.* 1319 (1991); Tatiana Pouschine & Thomas Bancroft, *Why Not Buy the Real Thing?*, *FORBES*, Oct. 1, 1990, at 208 (describing Walt Disney Company's issuance of debt convertible into the cash value of shares in Euro Disney S.A., its 49% owned subsidiary).

88. Tom Pratt, *Synthetic Perks Offered in 144A Mart by Merrill*, *INVESTMENT DEALER'S DIG.*, Mar. 9, 1992, at 14.

exchangeable into the value of equity indexes,⁸⁹ and they could easily do the same for risky issuers. The problem of asserting jurisdiction over the holders of exchangeable bonds issued by foreign sovereigns would be even more difficult than the problem of asserting jurisdiction over the holders of similar bonds issued by foreign private entities.⁹⁰

Intermediaries could also create domestic and foreign holding structures that would hold risky equity in a manner that insulates beneficial owners from proportionate liability claims. Consider, for example, a trust whose corpus consists of shares in a risky issuer's equity. To fund the purchase of those shares, the trust could sell a series of debt instruments constituting a sequence of contingent claims on the current market value of the issuer's equity; or the trust could sell warrants or options constituting a series of contingent claims on future increases in the value of shares held by the trust. When all is said and done, no investor holding an instrument issued by such a trust has an equity interest in either the issuer or the trust. Yet any investor who holds a strip of securities issued by the trust (i.e., a sequence of bonds and warrants or options that, in the aggregate, yield a constant proportional claim to the trust's assets) has an investment with a value equal to that of limited liability equity in the unleveraged issuer.

The market has already generated analogous vehicles for other purposes. In the late 1980's, investment banks created pools of high-yield debt and then issued a series of contingent claims on the value of these pools.⁹¹ The most senior claims were substantially over-collateralized and were AAA rated even though all the bonds in the pool carried below-investment-grade "junk" ratings. The most junior claims were riskier than any single bond in the trust's portfolio and had a value sensitive to even a small number of defaults in the trust's portfolio of securities. A pool funded with risky equity could utilize essentially the same structure.

Similarly, Morgan Stanley & Co. has proposed a new security called Short-Term Equity Participations (STEP's). STEP's represent units in the Technology Equity Income Trust, a trust that holds a weighted portfolio replicating the American Stock Exchange's Technology Index. The trust will sell call options on the shares in its underlying index and invest the premiums earned from those

89. For a description of one such product, see Prospectus of Kingdom of Denmark (Jan 12, 1990) (issuance of 6,000,000 Nikkei Stock Average (225) put warrants; each warrant entitles holder to sell to Denmark one-fifth of the value of the Nikkei Stock Average at price equal to \$51.63) (copy on file with author).

90. See *supra* text accompanying notes 42-45.

91. See William Baldwin, *Why You Should Buy Junk Now*, FORBES, Apr. 30, 1990, at 440; Caren Chesler-Marsh, *Repackaging Junk*, INVESTMENT DEALERS' DIG., Nov. 28, 1988, at 19; John J. Curran, *Fewer Jitters About Junk Bonds*, FORTUNE, Apr. 29, 1985, at 337; David Gillen, *More Junk Bonds May be Repackaged as High-Grade Securities, Analysts Say*, BOND BUYER, Feb. 22, 1990, at 3; Marcia Parker, *Securitization of Junk Bonds Boosts Appeal*, PENSIONS & INVESTMENT AGE, Aug. 8, 1988, at 3.

options in Treasury instruments.⁹² Again, none of the unit-holders in this trust will be equity-holders in the issuers whose securities compose the index. Yet the return that these unit-holders earn will, nevertheless, track the return offered by the underlying equity.

Another class of transactions that easily achieves this result relies on the use of offshore investment vehicles. Consider, for example, an offshore mutual fund or unit investment trust that specializes in holding shares of risky U.S. issuers. Domestic investors who purchase shares in this offshore fund will be extraordinarily difficult for proportionate liability plaintiffs to reach. Plaintiffs would have to go abroad to attempt to identify the shareholders in the offshore fund. Foreign courts might not order the disclosure of such information for purposes of enforcing a proportionate liability judgment⁹³ and, even if they did, U.S. investors intent on avoiding proportionate liability claims could hold these foreign securities through nominee accounts in secrecy jurisdictions. Investors who are sufficiently large and sophisticated may not even need the intermediation of a foreign collective investment vehicle because they simply could hold their stock directly in foreign accounts that U.S. proportionate liability judgments could not reach. Thus, even if a risky issuer continues to maintain a substantial float of plain vanilla equity, the market has mechanisms to reduce or eliminate the proportionate liability risk associated with holding these shares.

IV. THE PROSPECT FOR REGULATORY RETALIATION

Proponents of proportionate liability are unlikely to accept capital market arbitrage without a fight. To stem potential avoidance strategies of the sort described, the traditional response is a series of rules and regulations designed to close "loopholes" in the new legal regime.⁹⁴ These new rules and regulations are intended to prevent large scale avoidance without generating costs in excess of the regime's purported benefits.

Capital markets have extensive experience with such reactive regulation,⁹⁵ which often triggers an escalating cycle in which regulatory initiatives inspire financial innovations that trigger further regulations that in turn give rise to

92. The net effect of this trust-based "buy-write" strategy is to provide unit-holders with a greater income stream than would be available from a portfolio of the trust's constituent shares, while simultaneously providing trust holders with an opportunity to share in a portion of the technology stock portfolio's substantial growth potential, capped by the possibility that substantial appreciation will be called away by the options purchasers. *Morgan Stanley Plans to Offer Security Tied to Technology Issues*, WALL ST. J., Feb. 7, 1992, at B10. These securities have not yet been issued, due to a decline in the value of the underlying index and disclosure issues raised by the Securities and Exchange Commission. Tom Pratt, *Morgan Loses Schrier and Lead in 'STEPS' Race*, INVESTMENT DEALERS' DIG., June 1, 1992, at 11.

93. See Alexander, *supra* note 26.

94. See, e.g., Hansmann & Kraakman, *supra* note 13.

95. See Kleinbard, *supra* note 87 (discussing tax system's difficulties in dealing with derivative market transactions similar to those analyzed in this Article); Hu, *supra* note 58 (discussing difficulties that banking regulators face in dealing with derivative market transactions similar to those analyzed in this Article).

additional rounds of innovation.⁹⁶ At the end of this cycle, the rule books are thicker, but the capital markets often restructure themselves to block the regulatory regimes' goals. Regulatory attempts to prevent capital markets from synthesizing limited liability equilibria will likely meet the same fate.

Proponents of reform have anticipated a small piece of the capital markets' potential response to proportionate liability. They recognize that corporations can substitute debt for equity, but optimistically suggest that courts can recharacterize "as constructive equity, ostensible debt financing that served as an obvious liability shield, thus making the debtholders as well as the shareholders bear unlimited liability for corporate torts."⁹⁷ They also recognize that equity can be shifted to intermediaries, such as mutual funds or trusts, that have few assets beyond the shares generating proportionate liability.⁹⁸ To deal with this possibility, proponents of reform suggest that the courts simply look through intermediaries to reach the ultimate beneficial owners of the intermediaries' shares.⁹⁹

These two measures are not, however, nearly sufficient to staunch the effects of capital market arbitrage or to prevent markets from achieving a separating equilibrium that replicates limited liability. To prevent arbitrage, proponents of proportionate liability will require a much broader regulatory structure of truly talmudic proportions that encompasses futures, swaps, and options contracts as well as pseudo-equity instruments of all sorts, including warrants and convertible and exchangeable debt. Writing these rules would be an impossible task, and even if such rules could be crafted, they would not make proportionate liability a workable alternative to a limited liability regime.

At the most fundamental level, if proponents of proportionate liability attempt to define futures, swaps, options, and other derivative instruments as "constructive equity" whose holders are potentially subject to claims for proportionate liability, they will, ironically enough, recreate informational problems similar to those that for decades served as the strongest rationale for limited liability. To calculate proportionate liability exposure, each shareholder must know the percentage of the total equity float in her portfolio. In a world without derivative markets, this calculation is trivially easy: a shareholder simply divides the number of shares she owns by the total number of shares issued and outstanding. But if derivative instruments are also to be considered as "constructive equity," each shareholder's proportionate exposure is forever changing and, as a practical matter, unknowable because the aggregate open interest in

96. See *infra* text accompanying notes 111-120 (discussing Interest Equalization Tax as an example of such a cycle).

97. Hansmann & Kraakman, *supra* note 1, at 1913. Indeed, these proponents of reform are "confident that the courts could check the most egregious instances of evasion by treating the suspect securities as constructive equity." *Id.* at 1894.

98. *Id.* at 1910-11.

99. *Id.*

futures, swaps, and options contracts is neither fixed nor publicly reported.¹⁰⁰ Indeed, the open interest reflected in these contracts can fluctuate dramatically, sometimes representing a small percentage of the equity issued by the corporation and at other times swamping the issuer's actual equity float.¹⁰¹ For example, if every derivative instrument written on one share of stock is considered equivalent to one share of constructive equity, the holder of one percent of the equity issued by a corporation could at most be liable for one percent of the corporation's exposure—but only if there are no derivative market instruments in the underlying security. The same shareholder could be liable for only one half of 1% if the open derivative market interest equals the size of the equity float, and at other times be liable for one quarter of 1% if the open interest equals three times the size of the equity float. The size of the shareholder's proportionate exposure thus depends on the size of the derivative market's open interest at the point that liability attaches.

In this world, shareholders would be unable to calculate a stable price effect resulting from proportionate liability because the potential exposure that results from holding a share depends on the size of the open interest in the derivative markets, and this figure is unknown. This difficulty effectively recreates an externality problem similar to one long associated with joint and several liability because each shareholder's liability again depends on the behavior of other investors.¹⁰² The potential magnitude of this problem is not, however, as large as it is under joint and several liability because the proportionality rule provides an upper bound for each shareholder's potential exposure. Nonetheless, the presence of derivative instruments that could be treated as constructive equity would certainly make pricing proportionate liability far more difficult than proponents of the regime suggest.

The difficulty of applying proportionate liability to derivative instruments does not end here. Derivative instruments do not represent identical exposure to changes in the value of an issuer's underlying equity. Consider a share of stock that trades at \$100, a one-month option to buy a share of that stock at a strike price of \$130, and a two-year option to buy a share at a strike price of \$80. Each of these instruments is indexed to the value of a single share, but the value of each differs tremendously depending on several factors, including the price of the underlying equity. Placing equal amounts of proportionate liability exposure on each of these options would be inequitable and inefficient because each represents a very different exposure to changes in the value of the issuer's equity. Although mathematical formulas are available to convert each of these options into a leveraged position that is akin to borrowing a sum

100. Though data on open interest in exchange-traded options and futures are publicly reported, over-the-counter positions in the private market are not disclosed. See Hal Lux, *Shaking the Street*, INVESTMENT DEALER'S DIG., Dec. 16, 1991, at 18.

101. See generally SHARPE & ALEXANDER, *supra* note 65, at 603.

102. See, e.g., Woodward, *supra* note 1.

of money to purchase a particular number of shares, these "hedge ratios" are sometimes difficult to calculate and are forever changing as market prices and interest rates change and as the options' time until expiration declines.¹⁰³

To address these measurement problems in a systematic and consistent manner, the legal system would have to establish complex equivalence rules defining the relationship between ownership of a derivative instrument and potential exposure to proportionate liability. Small mistakes in these legal rules could have dire consequences for derivative markets on risky securities; in fact, such mistakes could easily induce an artificial tax on derivative instruments that might cause them to disappear entirely—at least in domestic markets, where participants potentially could be tapped for proportionate liability.¹⁰⁴

In addition, if the rules implementing proportionate liability for derivative market instruments attempt to convert options and other derivative contracts into levered share equivalents, simple fairness would require that owners of hedged equity positions also have their proportionate liability exposure reduced to the extent of their hedged positions. For example, if an investor is long a certain number of call options and short an appropriate number of futures contracts, or short shares in the issuer itself, the investor could be holding a totally hedged position that neither increases nor decreases in value as the price of the underlying shares rises or falls. The same mathematical argument allowing options positions to be converted into share equivalents would call for treating such an investor as holding no equity-equivalent position in the issuer, regardless of the number of call options or other long derivative positions she holds.

Followed to its logical conclusion, however, this argument implies that if a traditional shareholder owns stock in an issuer and is simultaneously short an appropriate number of futures or options contracts, this investor can also be perfectly hedged and not have any equity-equivalent exposure. For proportionate liability purposes, this investor would have to be considered as holding no equity in the issuer despite her appearance on the corporation's books as a shareholder and her possession of all the benefits incident to shareholder status. Accordingly, because of the hedging possibilities available through derivative market transactions, not even shareholders of record necessarily have true economic exposure to changes in the value of the issuer's shares. Thus, if derivative instruments and traditional equity are to be treated consistently, it will be necessary to trace through a vast and intricate web of risk shifting transactions to determine

103. See, e.g., SHARPE & ALEXANDER, *supra* note 65, at 565-66 ("a nearly risk-free portfolio can be formed by simultaneously writing one call option and purchasing a number of shares equal to the hedge ratio"); BREALEY & MYERS, *supra* note 53, at 499 (explaining derivation of Black-Scholes option pricing model from observation that the value of an option is equivalent to the value of a leveraged position in underlying shares); COX & RUBINSTEIN, *supra* note 65, at 167 ("an appropriately levered position in stock will replicate the future returns of a call").

104. See, e.g., Joseph A. Grundfest & John B. Shoven, *Adverse Implications of a Securities Transactions Excise Tax*, 6 J. ACCT. AUDITING & FIN. 409 (1991).

precisely where the equity exposure to the price of an issuer's shares ultimately resides.

Derivative instruments thereby create a Hobson's choice for proponents of proportionate liability. These advocates can either ignore derivative market transactions and allow the capital markets to synthesize away the effects of limited liability, or attempt to allocate proportionate liability among derivative market transactions. The former course of action allows arbitrage that freely avoids exposure to proportionate liability through derivative transactions; the latter would recreate many of the problems that long served to justify limited liability, and also generate a complex and essentially unadministrable set of rules that could drive transactions to foreign markets.

If these problems are not enough to chill proponents of a proportionate liability regime, it is important to recognize that recharacterizing debt as constructive equity is not as simple as it seems. The tax law has wrestled unsuccessfully with the debt-equity distinction for decades,¹⁰⁵ and financial markets have repeatedly resorted to transactions capitalizing on the differential tax treatment of these two often interchangeable forms of investment.¹⁰⁶

105. Congress added § 385 to the Internal Revenue Code as part of the Tax Reform Act of 1969 in an effort to provide greater certainty and predictability in the characterization of debt and equity. See S. REP. NO. 552, 91st Cong., 2d Sess. 137-38 (1969). All efforts by the Treasury to promulgate regulations pursuant to this statutory authority have failed and Congress' effort to "pass the definitional buck to the Treasury proved to be a fiasco." BITTKER & EUSTICE, *supra* note 74, at 4-6. "[A]ttempts by the courts and the Treasury to enforce the debt-equity distinction have failed because the traditional rationale for the distinction is both impracticable and based upon factually incorrect premises." Adam O. Emmerich, Comment, *Hybrid Investments and the Debt-Equity Distinction in Corporate Taxation*, 52 U. CHI. L. REV. 118, 119 (1985). Hansmann and Kraakman suggest that the problem presented by corporate issuances of debt and equity substitutes should be relatively easy to identify and deal with ex post because "[c]onfronted with such a blatant evasion tactic, a court need only recharacterize some or all of the equity substitutes as constructive equity for purposes of pro rata tort liability." Hansmann & Kraakman, *supra* note 13, at 430. In particular, they suggest that it is easiest to respond to convertible securities because they can be characterized as constructive equity "whenever those securities appear to have been used to evade tort liability," *id.*, and that it is possible to treat "debt securities as constructive equity as well," when circumstances warrant. *Id.*

This analysis, however, presumes the conclusion. These avoidance (not "evasion") tactics need not be "blatant." Indeed, adoption of these tactics can serve many legitimate purposes other than "to evade tort liability," and the incentive effects of proportionate liability can be arbitrated away without resort to extreme situations of the sort Hansmann and Kraakman assume would be easy to identify. In particular, it will be trivially easy to generate legitimate rationales for the use of equity substitutes, particularly because the price effects of proportionate liability will make it cheaper to finance through these vehicles. Corporations will thus be able to present powerful evidence of rational price incentives to issue equity substitutes, and unless it is possible to segregate the ex ante price effects of proportionate liability, the recharacterization will not be easy. It will instead be arbitrary.

The recharacterization problem in the tax arena is, moreover, essentially identical to the recharacterization problem in the proportionate liability regime. If the problem has proven intractable in the tax context, there is no reason to believe that it will be any easier to resolve in the proportionate liability context. To reverse the proposition, if advocates of proportionate liability are confident that they can easily resolve the problem in the proportionate liability context, they have also achieved quite a breakthrough that revolutionizes tax treatment of the debt-equity issue.

106. See, e.g., David P. Hariton, *The Taxation of Complex Financial Investments*, 43 TAX L. REV. 731 (1988); Kleinbard, *supra* note 87; Emmerich, *supra* note 105.

Because distinguishing between debt and equity has proven impossible for other purposes, this distinction cannot be relied upon to allocate proportionate liability.

Moreover, to the extent proponents of proportionate liability argue that "truly opportunistic uses of debt financing to avoid tort liability" are "easily isolated by the courts,"¹⁰⁷ these proponents must believe that the courts can, at least on an ex post basis, determine minimally necessary equity capitalization levels. These two contentions are necessarily connected because only if debt approaches some "excessive" level designed to evade proportionate liability can debt financing be considered opportunistic.¹⁰⁸ These levels cannot be defined without reference to some minimally acceptable level of equity capitalization. But if courts, or even legislatures, are able to determine minimally necessary levels of capitalization, why not just articulate those standards *ab initio*? Such a clear statement would remove expensive and unnecessary uncertainty regarding characterizations of an instrument as debt or equity and would enable issuers to know the precise amount of insurance coverage they need to protect debt holders from proportionate liability. Further, this ex ante standard would not be susceptible to hindsight bias.¹⁰⁹

Proponents of proportionate liability themselves, however, understand that setting such levels is fraught with difficulty. Minimum capital levels would tend to be either overinclusive or underinclusive, and errors in setting those levels

107. Hansmann & Kraakman, *supra* note 1, at 1913.

108. Hansmann and Kraakman observe that the corporate income tax continues to generate substantial revenue despite the fact that expanded use of debt financing could decrease corporate tax obligations. Hansmann & Kraakman, *supra* note 13, at 434-35 n.22. From this observation, Hansmann and Kraakman suggest that the corporate income tax "actually offers a hopeful prognosis" for proportionate liability. *Id.* at 434.

This analogy is, however, inapposite. A decision to increase a corporation's debt-equity ratio does not merely reduce taxes by creating an interest deduction. It also creates serious agency and monitoring problems that imply an optimal debt-equity ratio beyond which the firm does not want to increase leverage despite the tax savings generated by additional debt financing. *See, e.g.,* Hansmann, *supra* note 35, at 284 (citing Michael Jensen & William Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure*, 3 J. FIN. ECON. 305 (1976), and Benjamin Klein et al., *Vertical Integration, Appropriable Rents, and the Competitive Contracting Process*, 21 J. L. & ECON. 297 (1978)). Firms therefore consciously avoid capital structures that minimize tax burdens, and instead optimize their financial state by balancing the agency costs of particular debt-equity ratios against the tax and other cash flow benefits. For a detailed analysis of this optimization process in an international tax context, see MYRON S. SCHOLES & MARK A. WOLFSON, *TAXES AND BUSINESS STRATEGY: A GLOBAL PLANNING APPROACH* (1992).

In contrast, assuming that assessable and nonassessable shareholders are equally vigilant as shareholder monitors, there are no agency costs generated by the reallocation of equity among anonymous shareholders, regardless of their assessability. The market therefore perceives no disincentive from the reallocation of equity to nonassessable shareholders, but associates real costs with the decision to raise too much capital in the form of debt rather than equity. The continued payment of corporate income taxes thus sheds no light on the market's likely response to proportionate liability.

If, however, nonassessable shareholders are less vigilant monitors than assessable shareholders, corporate monitoring will suffer as an increasing percentage of risky corporations' shares gravitate into the hands of nonassessable shareholders. This collateral effect of the market's arbitrage activity would constitute another cost of proportionate liability that would have to be weighed against its purported benefits.

109. "In hindsight, people consistently exaggerate what could have been anticipated in foresight." Baruch Fischhoff, *For Those Condemned to Study the Past: Heuristics and Biases in Hindsight*, in DANIEL KAHNEMANN ET AL., *JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES* 335, 341 (1982).

would send distortional investment signals throughout the economy.¹¹⁰ Betting on the ex post mistakes of the judicial system is not obviously superior to living with the ex ante mistakes of the legislative or regulatory system. Recharacterizing debt as equity is hardly as straightforward as it seems, and one cannot be optimistic about the possibility of constructing a regulatory regime that can stem capital market arbitrage.

V. BROADER IMPLICATIONS OF CAPITAL MARKET ARBITRAGE

The arbitrage that eliminates the price effects of proportionate liability is hardly unique in the annals of modern finance. Capital markets have a long and illustrious history of responding in ways that frustrate the best laid plans of even the most clever and well-intentioned regulators. This established pattern of regulatory intervention in the capital markets followed by market arbitrage around the legal regime carries deeper lessons for policymakers. In particular, the pattern suggests that efforts to modify behavior through regulation of capital market transactions are generally inferior to efforts at influencing the far less elastic markets for goods and services.

The Kennedy Administration learned this lesson the hard way. In the early 1960's, officials in the Kennedy Administration were concerned about the U.S. balance of payments deficit.¹¹¹ To stem the outflow of U.S. capital to foreign markets offering higher interest rates, the Administration proposed the Interest Equalization Tax (IET), which placed an excise tax on the purchase of foreign securities by U.S. taxpayers.¹¹² Congress enacted the IET in 1964. It was designed, among other things, to "make foreign investment less attractive [to U.S. entities] and to thus discourage foreign borrowing in the United States."¹¹³ This goal proved to be elusive, however, as "money is fungible and financial institutions are innovative."¹¹⁴

The Department of the Treasury anticipated the development of overseas foreign-currency-dominated capital markets, but failed to foresee that, in response to the IET, a substantial volume of dollar-dominated foreign financing would move offshore into the emerging Eurodollar market.¹¹⁵ To secure financing without having to abide by the IET restrictions, some U.S. multinationals created foreign finance subsidiaries. These subsidiaries issued Eurodollar securities "guar-

110. Hansmann & Kraakman, *supra* note 1, at 1927.

111. JAMES P. HAWLEY, *DOLLARS & BORDERS: U.S. GOVERNMENT ATTEMPTS TO RESTRICT CAPITAL FLOWS, 1960-1980*, at 45-46 (1987).

112. Interest Equalization Tax Act of 1963-64, Pub. L. No. 88-563, 78 Stat. 809 (1964). The tax was reduced to zero by Exec. Order No. 11,766, 3A C.F.R. 126 (1974). It was repealed by the Tax Reform Act of 1976, Pub. L. No. 94-455, 90 Stat. 1520 (codified as amended in scattered sections of 26 U.S.C.).

113. CHARLES J. JOHNSON, JR., *CORPORATE FINANCE AND THE SECURITIES LAWS* 461 (1990).

114. HAWLEY, *supra* note 111, at 59.

115. *Id.* at 50.

anteed by the parent and often convertible into the parent's common stock."¹¹⁶ The U.S. government also failed to anticipate that because the IET taxed foreign portfolio investments while at the same time imposing no restrictions on foreign direct investments,¹¹⁷ it would cause a "large increase in the export of short- and medium-term capital abroad via the commercial banking systems."¹¹⁸ These "capital outflows . . . substituted for sales of securities that were shut off by the interest equalization tax"¹¹⁹ and effectively arbitrated around the intended effect of the IET. The arbitrage was further facilitated by the presence of large, offshore, dollar-denominated bank deposits that were not repatriated and that served as the basis for the burgeoning Eurodollar market.¹²⁰

In 1965, to stem the continuing outflow of investment capital, President Johnson announced the Voluntary Foreign Credit Restraint Program (VFCRP), an initiative designed to restrain foreign direct investments.¹²¹ By 1966, however, the Council of Economic Advisors concluded that the VFCRP had failed to achieve its goal.¹²² The Johnson Administration responded by instituting mandatory direct investment controls through the Foreign Direct Investment Program (FDIP).¹²³ The FDIP, however, stimulated further growth of the Eurodollar market,¹²⁴ which helped destabilize the dollar and thus, ultimately,

116. JOHNSON, *supra* note 113, at 467.

117. HAWLEY, *supra* note 111, at 53-54.

118. *Id.* at 59. The net outflow of private investment capital increased from \$4.3 billion in 1963 to \$6.4 billion in 1964. U.S. DEPARTMENT OF COMMERCE, SURVEY OF CURRENT BUSINESS 20 (1965), *cited in* HAWLEY, *supra* note 111, at 63.

119. HAWLEY, *supra* note 111, at 63 (quoting Evelyn M. Parish, *The U.S. Balance of Payments in 1964*, in U.S. DEPARTMENT OF COMMERCE, SURVEY OF CURRENT BUSINESS 16 (1965)). Canada served as another route through which capital avoided the IET. Because Canada depended on U.S. markets for roughly 20% of its investment capital, foreign policy considerations led to an exemption for Canadian transactions. Canada, however, had no capital controls analogous to the IET, and therefore "a significant amount of leakage could be expected via Canada into Europe. This leak was not plugged by Canadian authorities until 1968, after considerable pressure from the United States." *Id.* at 47. In light of current events, it is also intriguing to observe that the government granted a more modest exemption to Japan because of its then substantial capital needs. *Id.*

120. JOHNSON, *supra* note 113, at 461.

121. *Message of the President of the United States to Review the International Balance of Payments and Our Gold Position, in Balance of Payments 1965: Hearings Before the Senate Committee on Banking and Currency*, 89th Cong., 1st Sess. 4-5 (1965), *cited in* HAWLEY, *supra* note 111, at 65. The VFCRP, which was administered by the Department of Commerce, did not apply to financial institutions. By the late 1960's, the Federal Reserve Board, through its power to regulate member banks and in coordination with the Department of Commerce, informally forced U.S. banks to comply with its overseas lending guidelines in a manner that rendered the program less than "voluntary." *Id.* at 69. *See generally Revised Guidelines for Banks and Nonbank Financial Institutions*, FED. RESERVE BULL., Jan. 1970, at 11-22.

122. COUNCIL OF ECONOMIC ADVISORS, ANNUAL REPORT, ECONOMIC REPORT OF THE PRESIDENT 166 (1966) ("[T]here was disquieting evidence that plans for direct investment in 1966 remained at a high level. . . .").

123. FDIP was established by Exec. Order No. 11,387, 3 C.F.R. 90 (1968), *reprinted in* 12 U.S.C. app. § 95a (1976), under authority granted to the President by the 1917 Trading With the Enemy Act, Ch. 106, 40 Stat. 411 (codified as amended at 50 U.S.C. app. § 5(b) (1976)). *See* HAWLEY, *supra* note 111, at 87-107.

124. HAWLEY, *supra* note 111, at 106. The Bank for International Settlements estimated that the Eurocurrency market, of which roughly three-quarters constituted dollar-denominated transactions, grew from \$9 billion in 1964 to \$71 billion in 1971. *Id.* at 112.

contributed to the collapse of the fixed exchange-rate system¹²⁵—events that the capital controls were intended to avoid.¹²⁶ The capital controls thus failed to eliminate trade imbalances or to support the dollar, and had the unintended consequence of fostering the emergence of an active, well-capitalized Eurodollar market which today competes with domestic capital markets. The failure of this initiative was clear by 1974, when the government abolished the IET, VFCRP, and FDIP.¹²⁷

Because of relatively simple capital market arbitrage of this sort, the IET, VFCRP, and FDIP failed dismally in achieving their intended public policy objectives but succeeded smashingly in stimulating the growth of international money markets. By closing the New York market to international offerings for dollars and providing an incentive for U.S. multinationals to “merely shift[] their capital-raising activities to the overseas markets in Europe,”¹²⁸ these regulatory restrictions fueled the growth of London as the focal point of a huge Eurodollar market. Indeed, staff of the Securities and Exchange Commission point to IET as a turning point in the history of modern international finance—the point at which domestic U.S. regulation caused much of the international finance business to migrate offshore.¹²⁹

Similarly, in the more recent debate regarding a proposed stock transactions tax, serious Congressional concerns about the ability to enforce such a levy in highly internationalized markets replete with derivative transactions helped persuade policymakers of the plan’s infeasibility.¹³⁰ Concern that the tax would drive transactions offshore and do nothing to reduce turnover in U.S. securities markets buttressed the conclusion that the tax would fail to achieve its intended purpose and would instead have a wide range of undesirable side effects.

A proportionate liability regime would, as a practical matter, cause problems similar to those engendered by the IET and those that led Congress to abandon

125. See Richard M. Nixon, *Address to the Nation Outlining a New Economic Policy: “The Challenge of Peace,”* 1971 PUB. PAPERS 886, 888 (Aug. 15, 1971) (announcing end of gold standard), cited in Kenneth W. Dam, *From the Gold Clause Cases to the Gold Commission: A Half Century of American Monetary Law*, 50 U. CHI. L. REV. 504, 528 (1983).

126. HAWLEY, *supra* note 111, at 108-20 (discussing long-term, contradictory consequences of IET, VFCRP, and FDIP). Hawley argues, among other things, that U.S. transnational banks, by borrowing dollars offshore, were able to circumvent the restrictive monetary policies the Federal Reserve Board had adopted in the late 1960’s to support the value of the dollar. Furthermore, “[t]he Eurodollar market enabled U.S. [transnational banks] to circumvent the impact of [Federal Reserve Board] Regulation Q’s interest-rate ceilings used to control the credit-creating capacity of the U.S. banking system by routing transactions through their foreign branches.” *Id.* at 113.

127. *Id.* at 107.

128. Carl T. Bodolus, *The Internationalization of Securities Markets*, 29 BUS. LAW. 107, 107 (1974).

129. *Id.* at 108.

130. See, e.g., CONGRESSIONAL BUDGET OFFICE, REDUCING THE DEFICIT: SPENDING AND REVENUE OPTIONS, A REPORT TO THE SENATE AND HOUSE COMMITTEES ON THE BUDGET: PART II 389 (1990) (concluding that transactions tax would be most difficult to implement because “[i]t would be difficult for the IRS to audit [foreign] transactions . . . so compliance would probably be low”); Grundfest & Shoven, *supra* note 104; Joseph A. Grundfest, *The Damning Facts of a New Stocks Tax*, WALL ST. J., Jul. 23, 1990, at A10.

securities transactions taxes. The difficulties associated with the IET, stock transactions tax proposals, and a proportionate liability regime can be explained by the fact that each of these policies attempts to tax or regulate highly elastic financial markets that can easily restructure themselves in response to governmental intrusion. In a related vein, Frank Ramsey established more than sixty years ago that a Pareto efficient tax system would set levies at rates inversely proportional to the sum of the elasticities of supply and demand in the markets subject to the tax because that strategy minimizes the deadweight loss caused by taxation.¹³¹ This finding suggests that markets with relatively elastic supply and demand schedules should be subject to lower tax rates and less regulatory intervention, whereas markets with relatively inelastic supply and demand schedules can optimally be subject to higher tax rates and greater regulatory intervention.

Capital markets have among the highest degrees of elasticity of supply and demand. On the demand side, investors can readily shift from one security to another and can easily transfer assets across international borders to tap offshore opportunities. On the supply side, investment bankers, commercial bankers, exchanges, and other intermediaries all stand ready to introduce new financial instruments and transaction techniques to satisfy investor demands. In light of the mobility, innovation and competition apparent in the world's capital markets, it is difficult to identify a market that is more elastic.

The markets for goods and services are, in contrast, not nearly so elastic. In the context of selecting a corporate liability rule, if the choice is between regulating the hazardous activity in which the corporation engages or regulating the capital structure of the corporation itself, the lesson is clear: Regulate the activity and not the capital flow. Thus, if society is concerned that a chemical manufacturer is undercapitalized or is engaging in unreasonably hazardous activity, it is more effective to regulate the manufacturing process itself or the market for the chemical than it is to tamper with the far more elastic market for the capital that funds this hazardous enterprise.

This Article represents a case-specific manifestation of this more general principle. In order to achieve the internalization of risk sought through a proportionate liability system, architects of the regime will inevitably be driven to broaden the base of transactions subject to proportionate liability because the high degree of elasticity in capital markets will force them to chase a dizzying array of sophisticated market responses. In contrast, by directly regulating the less elastic markets for the production or consumption of the goods and services that give rise to concern, regulations will have to chase fewer market responses and can achieve the regulators' desired outcomes at lower social cost.

131. See Frank P. Ramsey, *A Contribution to the Theory of Taxation*, 37 *ECON. J.* 47 (1927); JOSEPH E. STIGLITZ, *ECONOMICS OF THE PUBLIC SECTOR* 403-04 (1st ed. 1986). This analysis depends on a number of assumptions, including the fact that lump-sum taxes are infeasible. STIGLITZ, *supra*, at 403.

CONCLUSION

Limited shareholder liability certainly has its theoretical flaws. It is not a thing of perfect beauty, but at least it works. In contrast, proportionate liability has theoretical charms, but nevertheless is not a practical alternative to limited liability—at least for corporations with liquid, actively traded equity. Because modern capital markets can readily arbitrage around the price effects of proportionate liability to synthesize limited liability pricing, a shift to proportionate liability will simply impose additional transaction costs on investors and issuers alike. This game is not worth the candle.

To view the corporate liability debate in a fuller perspective, it is important to recognize that the trend is toward increased reliance on limited liability. Lloyd's of London, long the paradigmatic example of an institution that relied on unlimited liability, has recently announced plans to limit the liability of its "names," the investors who stand at risk in underwriting Lloyd's insurance policies.¹³² Accountants and attorneys who have long been personally liable to the full extent of their fortunes for their own and their partners' negligence are now pushing for limitations on their personal exposure.¹³³ States are also creating new forms of business organizations designed to combine the limited liability characteristics of corporations with the pass-through characteristics of partnerships.¹³⁴ Only academia seems to be running in the opposite direction.

132. The liability of Lloyd's names is, in many ways, similar to that which would be imposed under a proportionate liability regime. "Names have unlimited personal liability for their respective share of [an underwriting syndicate's] risk" but a name has "no responsibility whatsoever for the liability of his fellow syndicate members." *Roby v. The Corp. of Lloyds*, [Current Binder] Fed. Sec. L. Rep. (CCH) ¶ 96,825, at 93,290 (S.D.N.Y. June 12, 1992). Recent financial losses at Lloyd's have nonetheless given rise to several proposals for providing names with limited liability protection. See G. Bruce Knecht, *Beleaguered Lloyd's: Famed British Insurer is Fighting for Survival*, BARRON'S, June 1, 1992, at 15 ("Unlimited liability—historically one of the organization's chief attractions for clients—probably will become a relic of the past."); John Moore, *Posgate Calls for End to Lloyd's Principle of Unlimited Liability*, INDEPENDENT, Sept. 24, 1991, at 22 ("Lloyd's and its underwriting members have been hit by more than one billion pounds of losses and an internal task force is considering whether unlimited liability is an appropriate mechanism to underpin Lloyd's insurance policies."); *New Turmoil at Lloyd's*, UPI, Feb. 24, 1992, available in LEXIS, Nexis Library, UPI File ("Last year's losses prompted calls for Lloyd's to abandon its unique practices, such as the time-honored rule that all its individual investors have unlimited liability to pay claims.").

133. See, e.g., *AICPA Members Okay Proposal to Permit CPA Firms to Organize as Corporations*, 24 Sec. Reg. & L. Rep. (BNA) 109 (Jan. 24, 1992); Lee Berton & Joann S. Lublin, *Seeking Shelter: Partnership Structure Is Called in Question as Liability Risk Rises*, WALL ST. J., June 10, 1992, at A1; see generally Stephen A. Kalish, *Lawyer Liability and Incorporation of the Law Firm: A Compromise Model Providing Lawyer-Owners with Limited Liability and Imposing Broad Vicarious Liability on Some Lawyer-Employees*, 29 ARIZ. L. REV. 563 (1987) (recommending that lawyer-owners be permitted to limit their liability by incorporation and that lawyer-employees be treated as if they were sole practitioners engaged in the practice of law); Larry E. Ribstein, *The Deregulation of Limited Liability and the Death of Partnership*, 70 WASH. U. L.Q. 417, 423 (1992) (suggesting that unlimited liability in partnership form "has been preserved by legal rules that make limited liability costly, including the tax distinction between partnership and corporation," and projecting trend toward limited liability).

134. See David G. Dietze, *The Limited Liability Company: Latest Strategy and Developments*, 6 INSIGHTS 3 (1992); Thomas Earl Geo, *Understanding the Limited Liability Company: A Basic Comparative Primer*, 37 S.D. L. REV. 64 (1992); R. Bruce Johnson & Steven W. Bennett, *Limited Liability Companies Introduced in Many States*, J. MULTISTATE TAX'N 105 (1991); Brian L. Schorr & Aileen R. Leventon, *Limited Liability Company: An Alternative Business Form*, N.Y. L.J., May 30, 1991, at 1.

Whether and how to deal with the shortcomings of limited liability are therefore questions that deserve to be addressed from a broader perspective. For all the academic controversy, the evidence is hardly overwhelming that limited liability causes a significant increase in a corporation's willingness to engage in risky behavior.¹³⁵ If limited liability causes such a problem, and if the magnitude of the problem makes an extensive remedy worthwhile, then alternatives other than proportionate liability must be considered because proportionate liability cannot succeed in the face of extensive capital market arbitrage. The three leading alternatives to changes in shareholder liability rules are minimum capitalization requirements, product safety standards, and "gatekeeper" liability provisions.

Minimum capitalization requirements establish levels of equity capital or insurance that enterprises must maintain in order to conduct certain lines of business. If an enterprise has the necessary capitalization or insurance coverage, the social and political judgment is that the enterprise has sufficient wealth at risk to ensure that it will behave responsibly in regulating its own activities. Minimum capitalization requirements have become the backbone of bank regulatory strategies,¹³⁶ and states often impose minimum insurance and other requirements as preconditions for engaging in certain lines of business.¹³⁷ On the other hand, these requirements have obvious administrative problems. The legislative and regulatory processes are likely to misestimate appropriate levels of capitalization and lag behind new market and technological data that might suggest adjustments to capitalization requirements.¹³⁸ To the extent that legislators and regulators "guess wrong" and set capitalization levels too high or too low, they will no doubt induce distortions in the market. Despite these obvious flaws, minimum capitalization requirements have the virtue of being effective. They can be applied equitably to domestic and foreign corporations, as well as to publicly traded and privately held firms. They cannot be arbitrated away because they are applied directly to markets for goods and services and

135. Hansmann and Kraakman recognize this point but argue that it is misleading to rely on the past incidence of corporate bankruptcies resulting from tort liability as an indicator of the extent to which limited liability induces excessive risk-taking, or as a predictor of the extent to which limited liability may be perceived as a problem in the future. Hansmann & Kraakman, *supra* note 1, at 1880-81.

136. See, e.g., Capital Adequacy Guidelines for Bank Holding Companies: Risk-Based Measure (Reg. Y), 12 C.F.R. § 225, App. A (1992); Camille M. Caesar, Note, *Capital-Based Regulation and U.S. Banking Reform*, 101 YALE L.J. 1525 (1992).

137. E.g., CAL. BUS. & PROF. CODE § 7549.1 (West 1992) (private security patrol operators); CAL. HEALTH & SAFETY CODE § 1597.531 (West 1992) (day care home operation); CAL. HEALTH & SAFETY CODE § 12,106 (West 1992) (use of high explosives). Sometimes, however, the government caps the maximum size of potential recoveries from providers of certain goods or services. See, e.g., Price-Anderson Act, codified as amended at 42 U.S.C. § 2210 (1982) (limiting liability from nuclear accidents), cited in James H. Davenport, *The Law of High-Level Nuclear Waste*, 53 TENN. L. REV. 481, 522-23 n.296 (1986); Daryl L. Jones, Note, *Fein v. Permanente Medical Group: The Supreme Court Uncaps the Constitutionality of Statutory Limitations on Medical Malpractice Recoveries*, 40 U. MIAMI L. REV. 1075 (1986); Nancy L. Manzer, Note, *1986 Tort Reform Legislation: A Systematic Evaluation of Caps on Damages and Limitations on Joint and Several Liability*, 73 CORNELL L. REV. 628 (1988) (discussing, *inter alia*, medical malpractice liability caps).

138. See Hansmann & Kraakman, *supra* note 1, at 1927-28.

have their effect before the capital markets even define securities based on cash flows generated by these goods and services.

Product safety standards play a similar role. By defining safety standards, regulators can reduce the risk of events that threaten to generate liability in excess of corporate assets. These standards cannot be avoided through capital market activity because, regardless of financial arbitrage, the market for goods and services—which is, after all, where torts occur—remains subject to these safety standards. Although the inefficiencies of product safety standards are legion and regulators inevitably make mistakes in setting such standards,¹³⁹ they can be enforced and do affect the standard of care followed by a corporation.

“Gatekeeper” strategies impose personal, civil, or criminal penalties on corporate decisionmakers and advisers who play a role in events leading up to the corporation’s involvement in a tort or crime.¹⁴⁰ Again, no capital market arbitrage can hedge away an individual executive’s exposure, and liability can be avoided only through the exercise of greater care in the market for goods and services. Gatekeeper liability is becoming increasingly popular as a strategy for dealing with troublesome corporate conduct: recent California legislation makes certain corporate officials criminally liable for some corporate torts;¹⁴¹ federal securities laws hold management liable for failure to supervise employees who violate securities regulations;¹⁴² and federal corporate sentencing guidelines provide an incentive for corporations to monitor their own compliance with a wide range of legal and regulatory requirements.¹⁴³ The concept is also applied abroad, as illustrated by India’s attempts to impose criminal gatekeeper

139. See, e.g., STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW* 281-82 (1987); W. KIP VISCUSI, *RISK BY CHOICE—REGULATING HEALTH AND SAFETY IN THE WORKPLACE* 114-55 (1983); John E. Calfee & Richard Craswell, *Some Effects of Uncertainty on Compliance with Legal Standards*, 70 VA. L. REV. 965 (1984); Thomas J. Knesner & John D. Leeth, *Improving Workplace Safety: Standards or Insurance?* REGULATION, Fall 1991, at 64, 64-68.

140. See, e.g., Reinier H. Kraakman, *Gatekeepers: The Anatomy of a Third-Party Enforcement Strategy*, 2 J. L. ECON. & ORG. 53 (1986); see also Reinier H. Kraakman, *Corporate Liability Strategies and the Costs of Legal Controls*, 93 YALE L.J. 857 (1984) (discussing executive liability); A. MITCHELL POLINSKY & STEVEN SHAVELL, *SHOULD EMPLOYEES BE SUBJECT TO FINES AND IMPRISONMENT GIVEN THE EXISTENCE OF CORPORATE LIABILITY?* (John M. Olin Program in Law and Economics, Stanford Law School, Working Paper No. 86, 1992) (demonstrating that employee sanctions may be beneficial); cf. RONALD J. GILSON, *THE LAW AND FINANCE OF CORPORATE ACQUISITIONS* 1095-137 (1986) (discussing successor liability in corporate acquisitions).

141. Corporate Criminal Liability Act, CAL. PENAL CODE § 387 (West 1992) (corporate managers who fail to disclose certain potential hazards are subject to imprisonment for up to three years and fines of up to \$25,000).

142. See, e.g., *Hollinger v. Titan Capital Corp.*, 914 F.2d 1564 (9th Cir. 1990); *Davis v. Merrill Lynch, Pierce, Fenner & Smith, Inc.*, 906 F.2d 1206 (8th Cir. 1990).

143. U.S. SENTENCING COMMISSION, *FEDERAL SENTENCING GUIDELINES MANUAL* §§ 8A1.2-E1.3 (1992) (dealing with sentencing of organizations). See also Gary G. Lynch & Susan L. Merrill, *Enforcement in the 1990s: The Corporate Response—The United States Sentencing Commission Guidelines*, in *PRACTICING LAW INSTITUTE, 23RD ANNUAL INSTITUTE ON SECURITIES REGULATION* (1991); Jonathan R. Macey, *Agency Theory and the Criminal Liability of Organizations*, 71 B.U. L. REV. 315 (1991); Christopher A. Wray, Note, *Corporate Probation Under the New Organizational Sentencing Guidelines*, 101 YALE L.J. 2017 (1992).

liability on the most senior executive of Union Carbide in connection with the Bhopal chemical leak.¹⁴⁴

Further, because minimum capitalization requirements, safety standards, and gatekeeper liability obligations can be applied equally to all corporations—whether large or small, public or private, domestic or foreign—they do not generate artificial incentives to operate businesses in one form or jurisdiction over another.¹⁴⁵ This consideration is particularly important from the perspective of international product markets¹⁴⁶ because, as powerful as capital market arbitrage may be, its consequences could pale in comparison with the product market substitutions possible in many markets. If proportionate liability (or any other liability regime) differentially raises the capital or production costs of output manufactured by corporations chartered in the U.S., consumers may flock to lower priced foreign substitutes and thereby drive U.S. chartered producers from the market. To address this contingency, proportionate liability legislation would have to impose some sort of equalizing tax or regulatory burden on goods and services produced by foreign chartered entities. The imposition of these burdens undoubtedly would be highly controversial and lead to yet another set of distortions and trade frictions as regulators attempt to level the international economic playing field. Thus, by focusing solely on capital market mechanisms that can negate the intended effects of proportionate liability, this Article understates the practical problems that a proportionate liability regime is certain to encounter.

This Article's analysis will, no doubt, inspire proponents of proportionate liability to amass additional rules and regulations designed to prevent capital and product market arbitrage around the rule.¹⁴⁷ It is impossible to anticipate the precise contours of each of these efforts to defend proportionate liability. As already suggested, however, capital markets will often be able to respond to these regulatory initiatives with new financial innovations,¹⁴⁸ and these proposed regulatory initiatives may raise new legal and practical difficulties even

144. *Bhopal Court Begins Extradition of U.S. Businessman Accused in 1984 Gas Leak*, INT'L ENV'T DAILY (BNA), Apr. 1, 1992, available in LEXIS, Nexis Library, BNA Int'l Env't Daily File; *Extradition Bid on Bhopal*, N.Y. TIMES, Mar. 28, 1992, at 40; *Union Carbide Official Not Likely to be Extradited*, AGENCE FRANCE PRESSE, Mar. 28, 1992, available in LEXIS, Europe Library, Agence France Presse File.

145. Though the analysis in this Article is specifically limited to corporations with liquid markets that can support active arbitrage transactions in their equity shares, the analysis also has implications for the treatment of shareholders in close corporations with illiquid equity. To the extent that risky economic activity can be pursued by corporations with liquid or illiquid shares, adoption of a proportionate liability rule creates an artificial incentive toward liquid equity because liquid equity facilitates arbitrage that avoids liability. A proportionate liability regime will therefore artificially and inefficiently induce the migration of risky economic activity from close corporations to publicly traded corporations, and this distortionary bias is yet another reason to retain traditional limited liability rules.

146. Hansmann & Kraakman, *supra* note 1, at 1922-23.

147. Hansmann & Kraakman, *supra* note 13, is typical of this effort.

148. See *supra* Part IV.

more profound than those created by the proportionate liability rule that they were designed to defend.¹⁴⁹

The inescapable implication of this analysis is clear: there is no simple proportionate liability rule. An enforceable proportionate liability rule would have to be adopted in conjunction with extensive and detailed rules governing international investments as well as the manufacture and importation of goods and services produced by corporations chartered in foreign jurisdictions with limited liability regimes. In addition, proportionate liability would require a heretofore undiscovered jurisprudence capable of distinguishing nonassessable debt from assessable equity. It would also have to be supported by a procedural armamentarium designed to maximize the reach of U.S. courts while minimizing the costs of enforcement. Even then, this Article suggests that the regime would likely fail.

Despite its flaws, limited liability may therefore be a necessary evil. Corporations undoubtedly engage in risky behavior that can cause damage in excess of their ability to pay. It does not, however, automatically follow that

149. Hansmann and Kraakman suggest that the problem of foreign nonassessable shareholders can be addressed by requiring a substantial percentage of all shareholders of U.S. firms in risky industries to be "(a) U.S. residents, (b) institutional shareholders with substantial (or, equivalently, well-diversified) assets in the U.S., or (c) individuals or well-capitalized institutional investors" that are foreign but that consent to U.S. jurisdiction for purposes of proportionate liability judgments. Hansmann & Kraakman, *supra* note 13, at 433. If a firm's shareholders fail to satisfy these conditions, the firm could be subject to mandatory insurance requirements.

This proposal raises three distinct problems. It may violate the principle of "national treatment," which, as articulated in many U.S. bilateral treaties of friendship, commerce and navigation, requires that foreign enterprises be afforded treatment "*no less favorable than the treatment accorded . . . in like situations*, to nationals, companies [or] products . . . as the case may be" of the United States. U.S. DEPARTMENT OF THE TREASURY, NATIONAL TREATMENT STUDY 30 (1990) (emphasis added). Under Hansmann and Kraakman's proposal, any corporation with "too many" foreign shareholders would be confronted with insurance requirements or other restrictions on its business that would not be imposed on corporations with "all-American" shareholder populations, regardless of the evidence of the domestic firm's capitalization, or of the capitalization of its shareholders. Hansmann and Kraakman's proposal thus differentially burdens firms that rely on foreign capital and runs counter to the historical position of the U.S. as "a strong advocate of national treatment and the free international movement of goods, services, and capital." *Id.* at 5.

In addition, to the extent that U.S. residents are permitted to hold shares without triggering any adverse consequences, regardless of their net worth, it would be trivially easy for foreigners to establish U.S. investment vehicles that are capitalized with assets sufficient only to purchase risky shares, but not to pay out any proportionate liability claims. To restrict this easy avoidance of the proposed rules, and to provide national treatment, Hansmann and Kraakman would have to require that at least a certain percentage of shareholders, regardless of their domicile, have assets sufficient to cover potential proportionate liability claims, or that the corporation itself have adequate assets or insurance.

If that requirement is imposed at the corporate level, it devolves into a straightforward minimum capitalization requirement. If it is imposed at the shareholder level, a third set of problems arises because minimum capitalization requirements imposed on shareholders are less efficient and less practical than minimum capitalization requirements imposed on corporations themselves. Shareholder capitalization requirements are clearly more expensive to administer because they require that the assets of potentially millions of shareholders be tracked or verified. Such requirements can also lead to inefficient risk bearing because they can preclude certain investors from holding shares even if their inclusion does not diminish the enterprises' aggregate ability to satisfy a tort judgment.

It is thus far from clear that Hansmann and Kraakman's attempt to staunch international mechanisms of arbitrage by imposing special requirements on firms having too many foreign shareholders would be practical, efficient, or consistent with U.S. treaty obligations.

the most practical and prudent course of action is to make a corporation's shareholders liable for damages resulting from corporate conduct. Capital markets can easily arbitrage around these liabilities and can synthesize limited liability pricing in a proportionate liability world. Indeed, capital markets can synthesize limited liability pricing in response to any regime that seeks to hold shareholders responsible for corporate damages. Under these circumstances, policymakers must look elsewhere for solutions to the problems purportedly created by limited liability.¹⁵⁰ Tools that are not susceptible to arbitrage, such as minimum capitalization requirements, product safety standards, and gatekeeper liability strategies may be more promising.¹⁵¹

Rather than concluding that "the burden is now on the proponents of limited liability to justify the prevailing rule,"¹⁵² it seems that the burden is on proponents of proportionate liability to demonstrate that their scheme is a viable alternative, much less a preferable one. More broadly, the burden is on opponents of limited liability to demonstrate that there is any practical alternative liability regime that cannot be avoided through capital market arbitrage and does not raise insurmountable implementation problems in international capital and product markets. Viewed from this perspective, limited liability may well be a necessary consequence of trading in modern capital markets rather than a discretionary rule that can be abandoned by the legal system if some other doctrine seems preferable.

150. The simple observation that a corporation can cause damage in excess of its ability to pay does not mean that the corporation causes damage *because* of its limited obligation to pay. The arguments suggesting that limited liability is a material factor in corporate risk bearing activities is impressionistic and depends on projections about future trends that may or may not turn out to be accurate. *See, e.g.*, Hansmann & Kraakman, *supra* note 1, at 1880-81.

151. Upon closer examination, policymakers may conclude that each of these alternatives generates costs in excess of benefits and that as uncomfortable as the status quo seems, it may be the best of all practically attainable worlds.

152. Hansmann & Kraakman, *supra* note 1, at 1880.