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Derivative Securities and Corporate Governance

Frank H. Easterbrook†

Corporate governance consists in the set of legal and contractual precautions that investors use to minimize the agency costs of management. Governance devices matter when they are the least-cost ways to constrain managers. If markets—including the capital market, the product market, and the managerial-services market—do the job better, then governance devices will not have much significance.¹

Many of the papers soon to be presented concern the workings of these devices. Authors ask, for example, how well the market for managers works, and under what circumstances tender offers protect investors by going over managers' heads, or when managers are justified in rejecting bids above market price. I want to open the Symposium by asking whether developments in capital markets, particularly the proliferation of new derivative securities,² supply a lower-cost alternative to governance mechanisms, and if so, over what domain.

I offer these thoughts in the spirit of Ronald Coase's paper *The Nature of the Firm*, published in 1937.³ Coase observed that "the firm" is just the result of a choice between organization by bureaucracy and organization by market. When markets are relatively expensive, then people choose to conduct their activities in ways that substitute other

† Judge, United States Court of Appeals for the Seventh Circuit; Senior Lecturer, The Law School, The University of Chicago. This essay was given as the keynote speech for the symposium "Management and Control of the Modern Business Corporation" at the University of Chicago in February 2002 and is © 2002 by Frank H. Easterbrook. Earlier versions were presented at the conference "What are the Aims of Corporate Governance and when does it Matter?" sponsored by the Trust Sixth Foundation and the Swiss Institute of Technology Zurich, September 1998, and the conference "Alternative Forms of Organization" in Venice, June 1999. I thank the participants in those conferences for many helpful comments.

¹ See, for example, Frank H. Easterbrook, *International Corporate Differences: Markets or Law?*, 9 J App Corp Fin 23 (Winter 1997); Roberta Romano, *The Genius of American Corporate Law* (AEI 1993); Frank H. Easterbrook and Daniel R. Fischel, *The Economic Structure of Corporate Law* (Harvard 1991).

² For the audience at this symposium it is hardly necessary to explain what "derivatives" are and how they work. Background, if necessary, may be acquired from Merton H. Miller, *Merton Miller on Derivatives* (Wiley & Sons 1997); Roberta Romano, *A Thumbnail Sketch of Derivative Securities and Their Regulation*, 55 Md L Rev 1 (1996); Myron S. Scholes, *Global Financial Markets, Derivative Securities, and Systemic Risks*, 12 J Risk & Uncertainty 271 (1996); Frank J. Fabozzi and Franco Modigliani, *Capital Markets: Institutions and Instruments* (Prentice Hall 2d ed 1996); Don M. Chance, *An Introduction to Derivatives* (Dryden 3d ed 1995); and Hans R. Stoll and Robert E. Whaley, *Futures and Options: Theory and Applications* (South-Western 1993).

³ See 4 *Economica* 386 (1937). See also R.H. Coase, *The Firm, the Market, and the Law* (Chicago 1988).

means, such as employees subject to superiors' instructions. As the price of making arrangements by markets falls, people use them more and bureaucracy less. How much production is organized inside firms thus depends on relative costs and fluctuates as these costs (including costs created by the legal system) change. Many modern developments entail reductions in the costs of market organization, which affects how production will be organized within (or across) firms, how capital is mustered, how use of each pool of capital is governed, and so on.

I

"Derivatives" are instruments or contracts that are based on the price of something else. Their value depends on a different asset, and hence is derivative from it. The classic derivatives are puts and calls on stock and futures contracts. The option known as a "call" entitles the holder to buy a share of stock at a fixed price. If Acme Industries is trading for \$95 today, I may own a call that gives me the right to buy Acme for \$100 during the next ninety days. What this means in practice is that I own the market price of Acme to the extent that it exceeds \$100 before the option's expiration. One share of stock has been split into two: the seller of the option owns the stock if its price remains under \$100, and otherwise the option holder owns the stock. Likewise the long on a futures contract has an option to buy wheat or oil if the value exceeds the contract price. The value of these options depends on the market price of the asset and its volatility. If that volatility is known and the price has been set in a reasonably efficient market, the value of the option can be derived from the famous Black-Scholes option pricing formula, for which Myron Scholes and Robert Merton have received the Nobel Prize in Economic Science.⁴

Until Black-Scholes, derivatives were synonymous with options and futures contracts; the only way to reckon a value was to allow trading and observe what happened on the floor. With the Black-Scholes pricing model, however, a liquid market *in the derivatives* became unnecessary—all that is essential is a market in the underlying assets. Thus, it became possible to build one-off derivatives for specific customers and uses. Instead of being limited to an option that transfers something simple (such as "the price of Acme to the extent it exceeds \$100 within ninety days"), it is today possible to tailor-make complex promises, such as the dividends of Acme bonds between years fifteen and twenty-three after their issuance, or the value of volatility in the stock market as a whole, or the difference between

⁴ Fischer Black would have received the prize too, had he not died before its award. (The rules of the Nobel Prize preclude posthumous awards.)

U.S. and Japanese interest rates, or the default risk of a bond separated from its interest rate risk. If you can imagine something, and can find a market from which to get prices and volatility corresponding to the thing you have in mind, you can build and sell that thing. You can have derivatives in Chicago's weather, for example—the volatility is well known from climate data, and prices can be proxied in the energy market.

There is a large and burgeoning literature on the financial aspects of derivatives. Scholars are interested in pricing derivatives, using them to hedge risks, protecting purchasers of derivatives from their own ignorance (and others' deceit), and so on. But almost no one seems to be interested in the relation between derivative instruments and the corporations whose securities are the physical assets on which the derivatives depend.⁵ Curing that omission is today's task.

When I say that "no one is interested in the relation between derivatives and governance," I exclude legislators and the popular press—they are interested all right, but not on an intellectual level. Enron sold the kind of climate derivatives I just mentioned and many related risk-shifting instruments,⁶ and the University of Chicago is among the buyers. This enabled the University to lay the risk of heating and cooling costs off onto a firm that had a large portfolio of energy supplies and could bear that risk better than the University, or hedge the risk more efficiently.

What has made Enron a dirty word these days is not what it did for clients, but the absurd values it attached to these contracts and its other activities. The contracts themselves continue to be valuable—and, according to a report in the *Wall Street Journal*, other derivatives protected many investors against the fall. Intermediaries sold approximately \$10 billion in Enron credit-risk derivatives—that is, instruments that paid off not when interest rates changed, but only when the issuer of the bond failed to pay.⁷ Stockholders could have protected themselves similarly if Congress had not for years prohib-

⁵ Well, almost no one. One author has explored the question from a different perspective. See Philipp V. Randow, *Derivate und Corporate Governance*, 254 *Zeitschrift für Unternehmens- und Gesellschaftsrecht* 594 (1996). (I am indebted to Theodor Baums for this reference.) There is also a literature posing the question how governance structures affect firms' decisions to use derivatives. Roberta Romano's essay on derivatives in the revised *New Palgrave Dictionary of Economics and the Law* discusses some of this literature. See Roberta Romano, *Derivative Securities Regulation*, in Peter Newman, ed., 1 *The New Palgrave Dictionary of Economics and the Law* 590 (Stockton 1998).

⁶ This is not to say that Enron was a middleman between counterparties. Instead it took a good deal of the risk of any given transaction but tried to keep its portfolio in balance. This is the sort of strategy pursued by firms such as Bankers Trust in the swaps market. Details of Enron's energy-market operations are unimportant to my exposition, and I disregard them.

⁷ See Tom Holland, *Heard in Asia: Credit Derivatives Prove Mettle Amid Enron Crisis*, *Asian Wall St J* M1 (Feb 1, 2002).

ited the sale of single-firm futures contracts. For twenty years they were illegal.⁸ The Commodity Futures Modernization Act of 2000⁹ has changed that—but it still has not been implemented by regulations (even though the futures markets are rarin' to go), and trading will be limited to wealthy and sophisticated investors. Congress apparently still does not believe that employees who are hog-tied by ESOP or 401(k) plans that radically under-diversify their financial capital should be able to hedge their risks.

But my problem is not one of political economy. It would be nice if small investors had access to the same portfolio insurance as large ones do, but my concern today is elsewhere. It is one of institutional design, not whether investors can hedge or whether managers at Enron can use derivatives to pull the wool over accountants' eyes. People can commit fraud using partnerships as vehicles, too, and no one says, "Well, Enron used partnerships as a tool of fraud, so let's abolish the partnership." Derivatives also attract the gullible such as the treasurer of Orange County, who thought that he could get four times the market return without bearing abnormal risk. Wrong. High return goes with high risk. Long-Term Capital Management produced four times the market return for five years, and when it suffered reverses everyone seemed surprised. Why? High return is compensation for high risk.

Reverses hardly show that the risk was not worthwhile. *The Wall Street Journal* recently observed that Ford lost \$1 billion on its inventory of palladium. The headline screams "How Ford's Big Batch of Rare Metal Led to \$1 Billion Write-Off."¹⁰ Seems that Ford went long in palladium to ensure an ample supply for use in making catalytic converters. It was speculating that prices would rise and was stockpiling to protect itself. When engineers figured out how to clean the exhaust with much less palladium, the price of that metal plummeted and Ford lost a bundle. The *Journal* observed that Ford should have done what General Motors did: buy palladium *futures* (not the metal itself) and hedge by selling offsetting positions. Of course, if Ford had hedged, then, when physical palladium fell \$1 billion, the derivatives would have produced an offsetting profit. But I can just see the contrary headline if (as Ford was betting) the price of palladium had continued to rise. Then the *Journal* might have screamed: "How Ford's Big Batch of Derivatives Led to \$1 Billion Write-Off"—for if the physicals had risen, the derivatives would have fallen. A hedger actu-

⁸ Much of the history may be found in *Chicago Board of Trade v SEC*, 187 F3d 713 (7th Cir 1999), and *Chicago Mercantile Exchange v SEC*, 883 F2d 537 (7th Cir 1989).

⁹ Pub L No 106-554, 114 Stat 2763, codified in scattered parts of the United States Code.

¹⁰ Gregory L. White, *Precious Commodity: How Ford's Big Batch of Rare Metal Led to \$1 Billion Write-Off*, Wall St J 1 (Feb 6, 2002).

ally wants to lose on derivatives; reverses in futures markets go hand-in-glove with wins in the underlying portfolio.

But hedging is just a sidelight. What enables a firm to hedge also enables it to unbundle—to get out of a business altogether, leaving tasks to the market and eliminating the need for “governance” of that aspect of production. Ford wants to make cars and take the business risk of chassis designs, motor designs, and predicting the demand for large versus small cars. It does *not* want to speculate in precious metals. Until recently, to run an auto business you had to run a metals business as well; yet the management and decision structures suitable to automobile manufacture may be unsuited to metals management. Derivatives would have enabled Ford to run an auto business divorced from a metals inventory—even though you need the metals to make cars. And in principle, derivatives enable a firm to disgregate fully. Just as Boeing and Airbus buy parts of planes from subcontractors—what the airframe manufacturers largely do is design and assemble things that other firms construct—so derivatives in principle allow every firm to disgregate every aspect of production. Each can take the risks it prefers, while unloading others. This strongly affects what governance mechanisms are best.

What goes with this is an ability for investors to disgregate a business even if managers are stubborn. Suppose that you fancy a Ford with just the auto business, not the metals inventory. You can home-brew that security: you buy Ford stock and sell a palladium contract in a futures market. This does more than allow the investor to synthesize a firm that does not exist. It puts a price tag on the Ford metals business: both investors and managers can see whether the metals business contributes to Ford’s value. If it turns out that the synthetic security of Ford-minus-metals is worth more than a real share of Ford stock, then Ford’s managers get a signal that they should spin off the metals business; and if they don’t do this, potential takeover bidders know that there is a potential profit in acquiring Ford, splitting off those endeavors that should be managed separately, and selling the revamped firm back to the market.”

To generalize: Additional ways to price or trade financial instruments ought to strengthen the capital market as a disciplinary force. What makes the capital market more efficient not only makes governance less important—in what field does it retain a comparative advantage?—but also makes governance better. That’s the central point of a

¹¹ There are other ways to profit, including persuading the managers to change course in order to make money in their own derivative instruments. All that matters for my purposes is that means exist to change a firm’s behavior and to profit from that change. As long as this can occur, one can write derivative instruments that pay off when the contingency occurs, and the price of these derivatives then value the anticipated effects of that contingency.

seminal essay Michael Jensen and William Meckling wrote more than twenty-five years ago.¹² Entrepreneurs must persuade investors to part with their money. In order to do so, the entrepreneurs must put in place governance structures that investors value at more than their costs; if they fail, they raise less money than they could have done, and thus themselves pay for the costs of their mistakes. Bad governance structures in place at money-raising time hurt the entrepreneurs, *not* the investors. Entrepreneurs and managers are rarely accused of leaving money on the table and thus have powerful reasons to choose wisely.

This mechanism for putting optimal governance devices in place depends on accurate pricing of securities issued by firms with different governance structures. Pricing will be inaccurate to the extent that the price-discovery function of securities markets has shortcomings (as it must—information and the price-discovery process is costly, and unless there is *some* inaccuracy in securities prices, no one will find it worthwhile to gather that information). It also could be inaccurate if risk aversion dissuades investors from changing their portfolios enough so that prices impound all available information. Portfolio theory tells investors to diversify, but if too many people take that advice, the price-discovery function of markets is impeded, and the terms of corporate charters will not be accurately priced. If investors do not fully diversify (in other words, if some investors hold large blocs in order to monitor more carefully, a substitute for optimal governance structures), they are bearing extra risk for which they demand compensation that the outside investors do not receive; supplying that compensation may require adverse adjustment of internal controls. As a result, firms will select governance devices inferior to those available at the time. But derivatives will enable differently structured firms—and differently *governed* firms—to be priced, so that the information can still be captured and used.

II

Derivatives, which provide wonderful hedging instruments, overcome many of the obstacles to accurate pricing and hence to the design of optimal terms. Do blocs create undiversified risk? Hedge it away! Are investors reluctant to move a lot of money quickly to take advantage of arbitrage opportunities? They can hedge these risks too. Do investors accept some inferior governance and management terms because they create a risk-return combination that is otherwise unattainable? With widely available and inexpensive derivatives, markets

¹² See Michael C. Jensen and William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure*, 3 J Fin Econ 305 (1976).

offer every conceivable risk-return combination (any that is unavailable and desired easily can be manufactured), so investors will unanimously favor the maximization of expected value within each firm.¹³

That trading in commodities futures contracts (one kind of derivative) serves a powerful price-discovery function is well established. People who have information about the supply and demand for wheat can put that information to use more rapidly in futures markets than in spot markets for the physical commodity, so futures markets are the best source of information about asset value. Most economists assume that this carries over to the case in which the underlying asset is a security. It is cheaper (by as much as an order of magnitude) to trade in futures and options markets than in the stock market, and trading in futures is often faster as well. Margin requirements are lower. (Margin in securities markets is an extension of credit; in futures markets it is a guarantee of performance, and the clearing corporations are so effective as guarantors of performance that little margin is necessary.) Informed traders therefore prefer derivative markets—especially because it is easier to conceal the traders' identities in these markets, and greater liquidity makes it possible to buy or sell additional quantities before price changes in response to the volume of trading. Derivatives markets can act as if the underlying security had a much larger float than it does.

An ability to buy and sell synthetic instruments instead of the real thing also helps markets to avoid legal controls. Must a firm have its "real seat" in Germany and use codetermination for its securities to trade in Frankfurt? Must a firm conform to U.S. accounting and disclosure standards in order to trade in New York? Currently most financing is obtained from home markets because of these and other complications; the expedient of issuing ADRs and similar instruments that trade in other countries does not get around these costs very effectively. But the transactions costs of derivatives are one-tenth the cost (or less) per share the cost of trading stock, and an even larger gain compared with ADRs. Listing (and many other controls) drop out with derivatives, especially swaps and other OTC products that are built to order. Just trade synthetic instruments of the U.S. firm in Germany, and of the German firm in the U.S.; all of the information held by investors in both countries thus is brought to bear on price, and markets then do their work in perfecting (or superseding) corporate governance devices throughout the world.¹⁴ Firms that list their

¹³ See Harry DeAngelo, *Competition and Unanimity*, 71 Am Econ Rev 18, 19 (1981). See also Louis Makowski, *Competition and Unanimity Revisited*, 73 Am Econ Rev 329, 329–30 (1983); Louis Makowski and Lynne Pepall, *Easy Proofs of Unanimity and Optimality without Spanning: A Pedagogical Note*, 40 J Fin 1245, 1245 (1985).

¹⁴ Robert Merton hints at this point in his Nobel lecture, though he does not make the tie

securities in multiple nations' markets experience both lower costs of capital and lower volatility.¹⁵ Costs of complying with multiple national systems of disclosure are a serious impediment to this practice, but the ability to trade synthetic derivative instruments can overcome it.

Similarly, a corporation might remain private (that is, without publicly traded equity) but obtain the benefits of outside monitoring via derivative trading. Myron Scholes suggested in his Nobel lecture that derivatives markets would permit the creation of "synthetic entities"¹⁶—business ventures that operate single projects, and therefore are not governed in the traditional sense. "Governance" is necessary only for long-term multi-party ventures; the rules of "corporate governance" are what the equity investors receive in lieu of the firm pay-out promises that uncertainty precludes the firm from issuing. Investors in small projects are protected by contract; so are debt investors in larger firms. Governance is a second-best solution for residual claimants in ongoing organizations. If uncertainty can be controlled via derivatives markets, the organization of production can be simplified and handled by direct contract (as many joint ventures now are) rather than by "governance" of any kind.

If for Coasean reasons business operations continue to be organized into general-purpose corporations rather than special-purpose teams, still the role of markets will increase and that of governance shrink. Think back to the Ford example. Ford organized metals acquisition into the same firm that built exhaust-gas-control systems. Why? Futures contracts enabled the firm to acquire palladium without taking price risks. That is to say, it allowed Ford to shrink what is in the domain of *governance* and expand what is in the domain of markets. Ford's investors have paid a \$1 billion penalty because the managers got the governance-versus-market choice wrong. Managers will be on the lookout for opportunities to get it right tomorrow. And because it is possible to have derivatives on almost anything, the zone of "governance" should be shrinking for a long time to come.

Derivatives also can be used to check the functioning of those governance systems that persist. By trading futures and options on securities yet to be issued, investors could improve the pricing of securities issued as part of initial public offerings, and therefore make it

back from securities prices to governance devices. See Robert C. Merton, *Applications of Option-Pricing Theory: Twenty-Five Years Later*, 88 Am Econ Rev 323, 326 (1998).

¹⁵ See René M. Stulz, *Globalization of Equity Markets and the Cost of Capital* at 4–6, NYSE Working Paper No 99-02 (1999) (on file with author); G. Andrew Karolyi, *What Happens to Stocks that List Shares Abroad?: A Survey of the Evidence and Its Managerial Implications*, NYSE Working Paper No 96-04 (1996) (on file with author).

¹⁶ Myron S. Scholes, *Derivatives in a Dynamic Environment*, 88 Am Econ Rev 350, 367 (1998).

clearer to entrepreneurs which governance devices are most highly valued. Although they have not developed yet, markets that price alternative governance terms are easy to contemplate (and create). A corporation contemplating an IPO of its stock could tell the markets this and permit a period of trading in hypothetical securities. If the futures contract for shares of this firm with and without a staggered board, with and without poison pills, and so on, the entrepreneurs will acquire vital information about which devices investors value and can either choose those that yield the best price or see explicitly how much must be forgone to select different devices. If they choose a setup that investors value less highly, the entrepreneurs will pay an explicit price. And as long as a governance structure is properly priced, investors are fully protected even if that structure falls short of perfection.

Once single-stock futures start trading in the near future, we will have a fascinating test. If markets in futures on securities with different governance structures fail to come into being, their absence would imply that governance terms are now priced efficiently, or at least are not so far off that money is to be made from arbitrage (else there would be a market for these contracts). Perhaps it would show, as Professors Kahan and Rock argue, that a plethora of equilibrating devices has offset the effect of traditional governance tools and poison pills. If these markets are created, then we can learn the real value of different governance devices. Even for existing firms, it should be possible to create synthetic stocks: say, the value a Pennsylvania corporation would have if incorporated in Delaware instead. The prices of these derivatives will tell managers which divisions to spin off and which governance devices to adopt or jettison. From my perspective, all should have an equal chance provided that they are priced. If investors will pay for poison pills, then more power to them, and courts should stop ordering directors to redeem. But if pills sell for a negative price when derivatives break out governance devices separately, then managers and courts would have a duty to get rid of them. Let investors decide.

Derivatives also would offer tender offer bidders a way to recover their costs of search and profit if an auction breaks out and someone else gets the prize; that possibility would make me more sympathetic to Lucian Bebchuk's auction model—even as his Article for this Symposium suggests that he is becoming more sympathetic to the Easterbrook and Fischel passivity model! Again, though, my main preference is to develop a way to attach prices to these possibilities and then let investors decide for themselves. Derivatives will help in this process of pricing governance terms.

Derivatives may influence the conduct of managers more directly and make formal governance devices less important. Managers tend to be risk-averse, for they are undiversified in both financial and human capital. (Firms try to align managers' interests with those of investors by compensating them with stock or stock-linked devices, which implies low diversification; managers' human capital also is specialized to the firm, or at least to its industry.) Risk-averse managers tend to select projects with low variance, although investors—who can act as if risk-neutral because of ready diversification in financial markets—prefer projects with the highest expected value, even if this means higher risk. At least in principle, derivatives allow managers to hedge the risks they bear, which would lead them to be more amenable to higher-variance projects with higher returns. Firms may not want managers to hedge in this way; if they do so perfectly, their own fortunes will be uncoupled from the firm's, and their incentive to maximize firm value will fall even if they become risk neutral. But it should be possible to design a package of compensation that strikes an optimal balance along the interest-alignment and risk axes.¹⁷ Firms already use packages of compensation including derivatives, although they have had to create the derivatives themselves.¹⁸ As synthetic instruments become more pervasive, it should be possible to do much better in the explicit markets.

Some firms could want their managers to use derivatives to increase the payoffs of their positions in order to produce rewards for taking the risks that investors prefer. For many reasons, some of them undoubtedly related to legal regulation (or the threat of regulation), a firm's top managers receive only a small fraction of their contributions to investors' wealth—less than 1 percent.¹⁹ The large market swings observed in takeover contests, or when management changes unexpectedly, imply that managerial decisions affect firms' value to a substantially greater degree than that. Interest-alignment is accordingly weak (a condition that makes "governance" more important). Henry Manne has argued that inside trading can counteract this effect,²⁰ but in the United States (and increasingly elsewhere) this has been for-

¹⁷ See generally Robert Dean Ellis, *Equity Derivatives, Executive Compensation, and Agency Costs*, 35 Houston L Rev 399 (1998).

¹⁸ Scholes reminds us that the high-yield notes issued to managers in leveraged buyouts and similar transactions combine debt with an option, and the option may be the predominant element of value. See Scholes, 88 Am Econ Rev at 364 (cited in note 16). This can be an effective substitute for "governance" devices in motivating and constraining managers. See Frank H. Easterbrook, *High-Yield Debt as an Incentive Device*, 11 Intl Rev L & Econ 183, 186 (1991).

¹⁹ Michael C. Jensen and Kevin J. Murphy, *Performance Pay and Top-Management Incentives*, 98 J Polit Econ 225, 261 (1990) (concluding that managers receive 0.3 percent of marginal contributions).

²⁰ See generally Henry Manne, *Insider Trading and the Stock Market* (Free Press 1966).

bidden on the ground that it “unfairly” allocates to managers gains that “really” belong to investors. The fairness objection is twaddle, for reasons Daniel Fischel and I have laid out,²¹ but the rule of law to which it led cannot be brushed off. Unless, perhaps, by using derivatives. Managers may purchase claims on the upper tail of the distribution of outcomes, multiplying their compensation if the firm does well—and without any possible claim that they have filched these profits from the firm’s equity investors. The parties on the other side of the transactions don’t own stock; the derivatives are just side bets.

Investors as well as managers can trade single-stock futures. In particular, unless regulators gum up the works, they should be able to go short in futures markets by posting cash margin, but without the need to borrow shares. The obligation to post shares themselves as collateral in a short sale cripples this equilibrating device in stock markets. People whose information implies a lower price tomorrow thus have trouble making a profit—and thus are less likely to bring that information to bear—in stock markets. When short selling is difficult, stock prices are less informative than they could be. Many of the proposals in this Symposium (and in the halls of legislatures and regulatory agencies) take the form: “Stock prices can be inaccurate, so financial markets therefore do not always induce managers to act in investors’ best interests; therefore we should impose on managers the following governance rules . . .” With markets in derivatives producing the information that short sales in stock markets have been unable to produce, arguments of this stripe should fade into history. It is impossible to see how legislators, regulators, or judges could claim a comparative advantage over financial markets once trading in derivatives ensures that *all* public information is embedded in securities prices.

III

What I have said so far implies that we can stop worrying about corporate governance. Things will take care of themselves nicely—though that doesn’t imply the end of conferences *about* corporate governance! Yet the more I have thought about the interaction of derivatives and corporate governance, the more I doubt that we can be so confident. The coming experiment is going to be interesting, and the conclusions are not forgone. Let me offer a sketch of reasons for this concern.

Most are just the opposite sides of the coins I have presented. Consider the use of derivatives to permit managers to hedge their un-

²¹ See Easterbrook and Fischel, *Economic Structure of Corporate Law* at 253–76 (cited in note 1). There may be other problems, however, to which I allude below.

derdiversified financial and human-capital portfolios. All to the good, if *investors* prefer that course for managers. Suppose, however, that managers choose it on their own and effectively liberate their compensation from the firm's performance.²² Investors won't be happy; both financial and governance devices can be defeated by this maneuver. Although managers could promise by contract not to use derivatives in this way, policing compliance could be very difficult. Derivatives markets facilitate anonymous trading, and, because most kinds of derivatives are not "securities" for regulatory purposes, the reporting requirements that apply to securities transactions do not come into play. If violations of a contractual promise not to trade are rarely observable, the penalty can exceed the manager's wealth, making enforcement impractical.²³ In other words, derivatives reduce the cost of cheating on promises to be undiversified (in order to align interests between managers and investors). When the cost of deceit goes down, the quantity rises.

Similarly, derivatives make it less costly for firms to hedge their risks—less costly, that is, for managers to indulge their risk aversion. Most derivatives are owned by firms, not by individual investors. The custom-designed swaps market, which at least by notional amount accounts for two-thirds of all derivatives outstanding,²⁴ is limited to banks, substantial corporations, and very large institutional investors. But why are corporations and large investment funds hedging? Investors are diversified and effectively risk-neutral (something that the derivatives market ensures) and do not gain from hedging at the firm level—not unless the Modigliani-Miller irrelevance theorem has been repealed in recent years. Ford could have hedged away its palladium risk, but taking that risk in the first place was silly. Its investors are risk-neutral, so why was Ford trying to lock in a price by buying metals in the first place? Why did its managers think that they knew more than the market about the future price of palladium?

In theory one can explain hedging at the firm level as a device to reduce bankruptcy costs (and the associated costs of financial failure), and thus the firm could take additional real risks without increasing the likelihood of incurring these deadweight reorganization costs. But bankruptcy is not particularly expensive compared with other means

²² See Steven A. Bank, *Devaluing Reform: The Derivatives Market and Executive Compensation*, 7 DePaul Bus L Rev 301, 323–29 (1995).

²³ This is one of the genuine problems with inside trading. How is a firm that wants its managers not to trade supposed to enforce that decision? See Frank H. Easterbrook, *Insider Trading as an Agency Problem*, in John W. Pratt and Richard J. Zeckhauser, eds, *Principals and Agents: The Structure of Business* 81, 93–94 (Harvard Business School 1985). The enforcement problem is considerably more difficult when the trading occurs in derivatives than when it occurs in the stock market.

²⁴ See Scholes, 88 Am Econ Rev at 362–63 (cited in note 16).

of unwinding affairs and paying investors, which makes the alternative explanation—that trying to smooth risk at the firm level is just a visible agency cost of management—more attractive. If this is right, then the explosion of derivatives markets demonstrates the failure of corporate governance devices (and compensation packages) to curtail managers' risk-aversion. It is hard to formulate empirical tests that will separate these hypotheses for hedging by corporations. Data remain scarce.²⁵

Next revisit the observation that informed traders prefer derivatives markets, because they can get faster and cheaper execution with a greater probability of anonymity. Anonymity is an obvious worry, because price effects depend more on *who* is trading (and the information that can be inferred from this fact) than on *how much* is being traded (though quantity also may permit inferences about what is happening at the firm). If informed traders increase their profits because concealment delays price adjustments, then the supposed price-discovery benefits of derivatives markets are overstated. Conceivably, the "benefits" could be negative.

Movement of informed or frequent traders from securities markets to derivatives markets has another potential effect on pricing, an effect that could be substantial. When major traders decrease their participation in the market for stocks and bonds, these markets become less liquid. A reduction in liquidity means a higher bid-asked spread, which means an increase in the expense investors incur for each trade. The price for which a security sells in the market is the present value of the anticipated cash flows, less the present value of transactions costs of holding and trading the instrument. Exchange-listed stock changes hands on average every two years, and the anticipated expenses of these trades, when discounted to present value, can be a significant fraction of the stock's price, especially when the firm is small (not large enough to use S-3 registration).²⁶ A reduction in securities prices attributable to a higher bid-asked spread in a less liquid market not only interferes with the accurate pricing of securities (and

²⁵ Peter Tufalo, *Who Manages Risk?: An Empirical Examination of Risk Management Practices in the Gold Mining Industry*, 51 J Fin 1097, 1129 (1996), concludes that managers in this business have indeed used derivatives to indulge their personal risk aversion, at the expense of their firms. Romano's essay in the *New Palgrave* expresses a cautious hope that this result is an outlier. See Romano, *Derivative Securities Regulation* at 596 (cited in note 5).

²⁶ Yakov Amihud and Haim Mendelson, *Asset Pricing and the Bid-Ask Spread*, 17 J Fin Econ 223 (1986), discusses the theory, and their follow-up article, *A New Approach to the Regulation of Trading Across Securities Markets*, 71 NYU L Rev 1411, 1427–30 (1996), contains the results of empirical studies estimating the size of this effect. See also Karolyi, *What Happens to Stocks that List Shares Abroad* at 35 (cited in note 15), (finding that firms electing to list their securities on multiple exchanges experience gains). Karolyi does not analyze the effects of trading on multiple exchanges over the issuers' objections; his study is confined to listing.

thus optimal choice of governance structures *ex ante*) but also means that some projects with positive net present value cannot be funded in capital markets.

Which effect of derivatives trading dominates: better price discovery, or reduced liquidity in the stock market? This is similar to the question whether investors gain from having stock traded on multiple markets. Concentration of trading in a single market (as used to be the case under a rule of the New York Stock Exchange) maximizes liquidity and brings all traders to one forum for price-discovery purposes; if one market has an effective property right in trading, the market also will adopt devices to facilitate these effects, while if trading is scattered the ability of other markets and traders to take a free ride on information generated by the dominant market will reduce both liquidity and pricing accuracy. But concentration of trading in a single place also conduces to monopoly, a persistent problem in the securities business. Theoretical arguments therefore can be made either way about the effects of increasing the number of places where securities and their derivatives are traded. The issuer itself has the right incentives to choose between trading in one place and trading in many, because its investors will capture the gains or feel the losses. But under current law in the United States, the issuer has no say in the matter—a new market can trade the firm's stock, or options on its stock, or other derivatives based on its stock, without the issuer's consent. A study by Yakov Amihud and Haim Mendelson shows that when a firm's securities (or options on its securities) begin to trade on an additional market, the bid-asked spread rises about half of the time and falls the other half. The difference depends on the firm's size: the larger its float, the more likely the additional trading is to yield a reduction in bid-asked spread (and a gain in share price).²⁷

This means that we cannot give thumbs up or thumbs down to the effect of derivatives on a market-wide level; the effect likely varies by firm. That's the usual conclusion to any discussion about governance devices, too. One-size-fits-all is as bad in the corporate market as in the clothing market. For example, voting stock is normally best because it vests control with the holders of the residual claims,²⁸ but sometimes family control through nonvoting shares may be superior (or at least the family may be willing to pay for this control by accepting a lower price for the shares it sells without votes). The great diversity of state and national laws, coupled with the fact that these laws permit entrepreneurs to design many of the details of corporate gov-

²⁷ See Amihud and Mendelson, 71 NYU L Rev at 1439–42 (cited in note 26).

²⁸ See Easterbrook and Fischel, *Economic Structure of Corporate Law* at 63–89 (cited in note 1).

ernance, permit choice of institutional design. What makes the Jensen and Meckling mechanism for the selection of optimal governance devices work, however, is the fact that the costs of these choices are borne by those who make them. Because most derivatives are designed and traded without the consent of, and without regard for, the corporation involved, this condition is not met. Perhaps we can discuss at the conference the question whether it is possible (and, if so, desirable) to give the firm property rights in derivatives based on its securities. Maybe Marty Lipton, inventor of the poison pill, can invent a new kind of stock that solves this problem too! We shall see. For now, though, I am content to see the Symposium get under way in a building nicely heated by virtue of a derivative product the University of Chicago purchased from Enron.

**SYMPOSIUM:
MANAGEMENT AND CONTROL
OF THE MODERN BUSINESS CORPORATION**

EXECUTIVE COMPENSATION AND TAKEOVERS

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