Insider Trading: Hayek, Virtual Markets, and the Dog that Did Not Bark

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"How is the betting?"
"Well, that is the curious part of it. You could have got fifteen to one yesterday, but the price has become shorter and shorter, until you can hardly get three to one now."
"Hum!" said Holmes. "Somebody knows something, that is clear!"

Inspector Gregory: "Is there any other point to which you would wish to draw my attention?"
Holmes: "To the curious incident of the dog in the night-time."
"The dog did nothing in the nighttime"
"That was the curious incident," remarked Sherlock Holmes.

From *The Adventure of Silver Blaze* by Arthur Conan Doyle

This Essay briefly reexamines the great debates on the role of insider trading in the corporate system from the perspectives of efficiency of capital markets, harm to individual investors, and executive compensation. The focus is on the mystery of why trading by all kinds of insiders as well as knowledgeable outsiders was studiously ignored by the business and investment communities before the advent of insider trading regulation. It is hardly conceivable that officers, directors, and controlling shareholders would have remained totally silent in the face of widespread insider trading if they had seen the practice as being harmful to the company, to themselves, or to investors. By analogy with the famous article by Friedrich Hayek, The Use of Knowledge in Society*, this Essay considers the problem of obtaining necessary information for managers of large corporate enterprises. The suggested analytical framework views the share price, sensitively impacted by informed trading, as a mechanism for timely transmission of valuable information to top managers and large shareholders. Informed trading in the stock market is also compared to "prediction" or "virtual" markets currently used by corporations and policymakers.*

PART I – BACKGROUND

It is almost 40 years since the publication of my book, *Insider Trading and the Stock Market*,[1] and the topic still has the ability to engender heated argument as well as seemingly unending efforts at analytical explication.[2] I apologize at the outset for continuing the debate, especially since I myself thought that it had about run its course. Nonetheless, the topic refuses to die, and it continues to stimulate new hypotheses, one of which is about to be offered.

This taxing of the intellectual tolerance of critics of insider trading may have a redeeming feature for many. In the process of developing this new idea, I have had to reexamine and substantially modify perhaps the most vigorously criticized claim I made for the positive benefits of unregulated insider trading. That was the notion that insider trading can be used as an important component of executive compensation. I hope that I am about to offer a much stronger substitute argument.

Fundamentally, my book made only three basic economic arguments.[3] One was that the practice of insider trading did no significant harm to long-term investors. The other two were claims of positive benefits from the practice, one, the compensation argument, and the other, the idea that insider trading contributed importantly to the efficiency of stock market pricing.

By and large the idea that there is no direct harm from the practice has held up very well, especially the point that no real damage is caused to an investor who engages anonymously on an exchange in a trade with an insider on the other side of the transaction. However, one "harm" argument of feasible merit[4] has dominated the academic literature for some time. This is the so-called "adverse selection" argument. Basically the argument is that, since specialists on the floor of stock exchanges (or other

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[1] HENRY G. MANNE, INSIDER TRADING AND THE STOCK MARKET (1966).

[2] For an excellent though but already somewhat dated bibliography, see Stephen M. Bainbridge, *Insider Trading*, *in* III ENCYCLOPEDIA OF LAW AND ECONOMICS 772, 798-812 (Boudewijn Bouckaert & Gerrit De Geest eds., 2000). For the most comprehensive treatise, see WILLIAM K.S. WANG & MARC I. STEINBERG, INSIDER TRADING (1996 & Supp. 2002).

[3] This discussion leaves aside such tangential but important issues as the enforceability of insider trading laws and public choice aspects of the subject, as well as such tangential but economically irrelevant notions as the fairness of the practice.

[4] I do not consider the SEC's "official" line on insider trading, that it destroys the confidence of investors and thus lessens both liquidity and investment, to have serious merit. Apart from being a nearly unfalsifiable proposition, it is devoid of the scantest economic or empirical content. It has, however, been enormously important in the propaganda campaign the SEC has waged for years to demonize insider trading.

market makers) systematically lose money when insiders are trading, they will expand their bid-ask spread in order to cover this greater cost of doing business. In this fashion, it is argued, they pass along the cost of insiders' trading to all outside investors with whom they deal, the so-called "insider trading tax."[5]

The first part of this argument is really just a variant of the idea in my book that short-term traders would indeed frequently lose to insiders[6] (a warning against using the stock market as a gambling casino). I suggested that long-term investors[7] had little to worry about quantitatively because of insider trading, and the same thing remains true regardless of the existence of some adverse selection. Furthermore, there is considerable evidence that the harm to market makers exists more in the theoretical world of finance literature than it does in the actual play of the market. Though the argument is theoretically feasible, it seems to be practically irrelevant in the real world.[8]

Of the two arguments that I offered for positive benefits from insider trading, the argument for a strong positive relationship between market efficiency and insider trading has proved to be very robust. I missed the very important and related advantage pointed out by Harold Demsetz that access to valuable trading information may allow controlling shareholders to be compensated for the additional risk they assumed by not being well diversified.[9] This is an especially important factor in corporate governance, since,

[5] Walter Bagehot (pseud. for Jack L. Treynor), *The Only Game in Town*, FIN. ANALYSTS J., Mar.–Apr. 1971, at 12; Thomas E. Copeland & Dan Galai, *Information Effects on the Bid-Ask Spread*, 38 J. FIN. 1457 (1983); Lawrence R. Glosten & Paul R. Milgrom, *Bid, Ask and Transaction Prices in a Specialist Market with Heterogeneously Informed Traders*, 14 J. FIN. ECON. 71 (1985).

[6] Perhaps in some sense long-term traders lose as well, but quantitatively that is insignificant as compared to short-termers, and even then one must look at various offsetting advantages. *See also* Henry G. Manne, *In Defense of Insider Trading*, HARV. BUS. REV., Nov.–Dec. 1966, at 113, 114-15.

[7] This refers to investors whose trades represent fundamentally a rebalancing of diversified portfolios to reflect changed circumstances or altered weightings in a previously correctly balanced portfolio.

[8] *See* Stanislav Dolgopolov, *Insider Trading and the Bid-Ask Spread: A Critical Evaluation of Adverse Selection in Market Making*, 33 CAP. U. L. REV. 83 (2004). One of the most telling criticisms of the adverse selection argument is that liquidity providers themselves – including the NYSE specialists and the NASDAQ dealers (but with the exception of liquidity providers in options markets) – are not generally concerned about the presence of insiders in stocks in which they make a market. *Id.* at 108-10, 136-144.

[9] *See* Harold Demsetz, *Corporate Control, Insider Trading and Rates of Return*, 76 AM. ECON. REV. (PAPERS & PROC.) 313 (1986). It is appropriate to note that controlling shareholders perform a valuable management-monitoring function not shouldered by others shareholders, whose incentive would be to free ride (the ultimate "separation" problem). Demsetz, however, may have overlooked the extent to which a

without a controlling shareholder, agency costs in large corporations, normally dealt with through an exogenous market for corporate control, will be much higher.

There is almost no disagreement that insider trading does always push the price of a stock in the correct direction.[10] This is not to gainsay that there are also other mechanisms that play a significant role in stock pricing, such as the explicit public disclosure of new information, sanctioned transmittal of information to financial analysts, and the so-called "derivative" trading that occurs after some form of market "signaling."[11] A vast literature has developed examining the relative impact of these various mechanisms on stock market pricing, but it is fair to say that none of this has seriously damaged the argument of the stock-pricing benefit of insider trading. This is not the right time or place to review that literature, and for present purposes we merely need to understand that insider trading does have the price vector claimed for it, even though this mechanism alone may play less than an exclusive role in making stock market pricing as efficient as it is.[12] The

control block of shares presents agency cost problems of its own, since there are other devices besides inside information by which a controlling shareholder may transfer wealth from minority shareholders.

[10] For empirical research arguing that insider trading quickly incorporates the impact of nonpublic information into the market price, see Ji-Chai Lin & Michael S. Rozeff, *The Speed of Adjustment of Prices to Private Information: Empirical Tests*, 18 J. FIN. RES. 143 (1995); Lisa K. Meulbroek, *An Empirical Analysis of Illegal Insider Trading*, 47 J. FIN. 1661 (1992). The only significant arguments are with the extent and timeliness of a price effect from insider trading. *See* Sugato Chakravarty & John J. McConnell, *Does Insider Trading Really Move Stock Prices?*, 34 J. FIN. & QUANTITATIVE ANALYSIS 191 (1999) (offering empirical evidence for the proposition that informed trading by insiders has the same price impact as uninformed trading by outsiders); James D. Cox, *Insider Trading and Contracting: A Critical Response to the "Chicago School"*, 1986 DUKE L.J. 628, 646 (arguing that insider trading is a "noisy" device for communicating the stock value). Research with "laboratory" experiments suggests that inside information is rapidly assimilated into market price and that this may occur even with very few insiders participating in the market, a finding particularly relevant here. *See, e.g.*, Martin Barner et al., *On the Microstructure of Price Determination and Information Aggregation with Sequential and Asymmetric Information Arrival in an Experimental Asset Market*, 1 ANNALS FIN. 1 (2005); Daniel Friedman et al., *The Informational Efficiency of Experimental Asset Markets*, 92 J. POL. ECON. 349 (1984); Charles R. Plott & Shyam Sunder, *Efficiency of Experimental Security Markets with Insider Information: An Application of Rational-Expectations Models*, 90 J. POL. ECON. 663 (1982). *But see* Vernon L. Smith et al., *Bubbles, Crashes, and Endogenous Expectations in Experimental Spot Asset Markets*, 56 ECONOMETRICA 1119 (1988).

[11] The standard reference for this discussion is Ronald J. Gilson & Rainier H. Kraakman, *The Mechanisms of Market Efficiency*, 70 VA. L. REV. 549 (1984). Without getting into too much detail, there are two significant weaknesses in Gilson and Kraakman's implicit effort to minimize the role of insider trading in this process. One is their failure to reckon with the price influence of insiders' refraining from buying or selling when they have undisclosed information. The other is a certain ambiguity in the concept of "derivative" trading, since it would seem that most of this trading must actually follow actual informed trading, including insider trading, and that would increase rather than decrease the relative influence of insider trading.

[12] An argument could be made, of course, that all price changes result from new information that someone has traded on profitably. The impact of explicit disclosure is often to confirm that the price reached in

crucial point for present purposes is that, even if only on a few occasions and either by itself or in tandem with other forces, insider trading may be sufficient to move the price of a company's stock.

My second "positive" argument for insider trading, that it could perform well as a part of an executive compensation package, has been the more forcefully attacked,[13] and it is perhaps less robust than I and other proponents[14] had originally assumed. The insider-trading compensation argument has become especially relevant in recent years,[15] as a great debate has swirled through business, regulatory, and legal circles about the proper way to compensate corporate executives. Much of this discussion has focused recently on stock options, since they were so heavily relied upon to compensate employees of the firms that figured heavily in the market collapse of the early 2000's. The focus on stock options in turn logically implicates the insider trading compensation argument, since the two are undoubtedly the closest substitutes in the compensation arena.

A stock option offers the same incentive to employees to work efficiently that would be provided by ownership of an appropriate number of shares, however obtained, but leveraged by non-recourse, interest-free debt. The indirect incentive effects of this leveraging are very difficult to value for corporate accounting purposes or, for that

other ways is correct. But this argument still allows explicit disclosure an important role in making stock market pricing efficient.

[13] STEPHEN M. BAINBRIDGE, CORPORATION LAW AND ECONOMICS 593 (2002) (insider trading creates the incentive for managers to disclose information prematurely); ROBERT CHARLES CLARK, CORPORATE LAW 273-74 (1986) (insider trading allows managers to determine their own compensation packages and undo formal compensation agreements); Cox, *supra* note 10, at 651-52 (insider trading is likely to increase managers' tolerance of bad news); Frank H. Easterbrook, *Insider Trading, Secret Agents, Evidentiary Privileges, and the Production of Information*, 1981 SUP. CT. REV. 309, 332 (insider trading may induce managers to accept excessively risky projects; insider trading as managerial compensation may be inefficient, as risk-averse managers would value trading profits differently than risk-neutral shareholders); Robert J. Haft, *The Effect of Insider Trading Rules on the Internal Efficiency of the Large Corporation*, 80 MICH. L. REV. 1051 (1982) (insider trading is likely to interfere with the flow of information within the firm); Roy A. Schotland, *Unsafe at Any Price: A Reply to Manne,* Insider Trading and the Stock Market, 53 VA. L. REV. 1425, 1448-50 (1967) (insider trading is likely to induce managers to delay disclosure and participate in market manipulation).

[14] *See especially* Dennis W. Carlton & Daniel R. Fischel, *The Regulation of Insider Trading*, 35 STAN. L. REV. 857 (1983).

[15] *See* Henry G. Manne, *Options? Nah. Try Insider Trading.*, WALL ST. J., Aug. 2, 2002, at A8.

matter, for the purpose of determining the value of the option to an employee.[16] Thus, even though there are a forward look and a leverage feature to options that cannot be obtained, say, with bonuses, there are still real problems with determining the exact incentive effect of stock option grants.[17]

After the option is exercised, and to the extent the employee holds on to the shares, the executive becomes a (larger) shareholder. Stock ownership obviously motivates a manager to maximize share price, especially if the shares represent a substantial part of the employee's portfolio. However, since the shares will represent only a tiny fraction of the company's outstanding shares, for familiar free-rider reasons, the induced incentive for risky choices may still fall short of what would be dictated by the interest of all shareholders. In other words, as a number of studies suggest, stock options at best offer no greater incentive than would an appropriate, but difficult to determine, number of shares held by the manager, however acquired, and leveraged by debt.[18] At worst they may provide real adverse incentives.[19]

When stock options are the primary device used to encourage risky decisions by managers, and to the extent that insider trading is effectively, or even substantially,

[16] The corporation's valuation of the same option may be quite different from that of the employee, as the debate about the FASB's recent requirement that the options be valued as an expense on the corporate books well attests. *See* FIN. ACCT. STANDARDS BOARD, STATEMENT OF FINANCIAL ACCOUNTING STANDARDS NO. 123, SHARE-BASED PAYMENT (rev. Dec. 2004). *See also* Brian J. Hall & Kevin J. Murphy, *Stock Options for Undiversified Executives*, 33 J. ACCT. & ECON. 3, 5 (2002) (arguing that the option's cost to the company "often significantly exceeds the value of the option from the perspective of a risk-averse, undiversified executive who can neither sell the option nor hedge against its risk").

[17] MICHAEL C. JENSEN & KEVIN J. MURPHY, REMUNERATION: WHERE WE HAVE BEEN, HOW WE GOT TO HERE, WHAT ARE THE PROBLEMS, AND HOW TO FIX THEM (Harvard Bus. Sch., NOM Research Paper No. 04-28, 2004), *available at* http://www.ssrn.com/Abstract=561305 (last visited ___); Lucian Arye Bebchuk et al., *Managerial Power and Rent Extraction in the Design of Executive Compensation*, 69 U. CHI. L. REV. 751 (2002); Saul Levmore, *Puzzling Stock Options and Compensation Norms*, 149 U. PA. L. REV. 1901 (2001); David Yermack, *Do Corporations Award CEO Stock Options Effectively?*, 39 J. FIN. ECON. 237 (1995); David Yermack, *Good Timing: CEO Stock Option Awards and Company News Announcements*, 52 J. FIN. 449 (1997).

[18] It is not surprising that the empirical studies of the incentive effects of options show a mixed bag. This device is arguably most useful in companies with executives who might have difficulty borrowing sufficient money to leverage their own purchases of their companies' shares, as may have been particularly the case with many high-tech start-up companies in recent years.

[19] *See* MICHAEL C. JENSEN, STOCK OPTIONS REWARD MANAGEMENT FOR DESTROYING VALUE AND WHAT TO DO ABOUT IT (Harvard Bus. Sch., NOM Research Paper No. 01-27, 2001); *available at* http://www.ssrn.com/Abstract=480401 (last visited ___).

prevented, the financial focus of corporate officials will necessarily be on accounting information, since the real world events underlying those entries cannot be traded on directly as they occur. The legal flow of information to the market will be via formal, SEC-sanctioned disclosures, including press releases, quarterly reports, 10-K's, and duly publicized conferences with financial analysts. Since future expected profits cannot be shown on the books, and trading on the underlying information is not allowed, the urge to make the accounting picture look better in order to have it conform to management's current view of the company's prospects – biased or not – may become irresistible. It is at least arguable that this constituted part of the underlying pressure for what occurred at Enron and various telecommunications companies.[20]

Insider trading on the other hand does not have these disadvantages. It in effect allows insiders meticulously to craft their own reward for innovations almost as soon as they occur and to trade without harm to any investors.[21] The incentive is immediate and precise and is never confounded with stock price changes that are not of the managers' making.

If insider trading were legal and used to replace stock options, there would be no "tragedies" of employees being left high and dry with options way out of the money. There would be no loss of reward when an innovation merely resulted in a reduction of an expected loss. There would be no unearned gain because a company's stock

[20] This is not an excuse for illegal and fraudulent behavior, but it does reveal a type of unanticipated consequence of securities regulation that rarely figures in the calculus of whether that regulation is desirable or not. One can compare this notion to what Michael Jensen terms the problem of "overvalued equity." *See* Michael C. Jensen, *The Agency Costs of Overvalued Equity and the Current State of Corporate Finance*, 10 EUR. FIN. MGMT. 549 (2004).

[21] A clear statement on this proposition was provided by Carlton and Fischel:

> Insider trading may present a solution to [the] cost-of-renegotiation dilemma. The unique advantage of insider trading is that it allows a manager to alter his compensation package in light of new knowledge, thereby avoiding continual renegotiation. The manager . . . in effect "renegotiates" each time he trades. This in turn increases the manager's incentive to acquire and develop valuable information in the first place (as well as to invest in firm-specific human capital).

Carlton & Fischel, *supra* note 14, at 870-71. The point about "no harm to investors" does not mean that short-term traders (really gamblers) or market makers trading against insiders will not lose money. They will, though they will only lose negligibly more than they would if insiders were not in the market but the price level change (or the release time of new information) was the same.

appreciates in line with a market or industry rise. There would be no disappointments about the number of shares optioned or granted to particular employees. There would be none of this absurd business of renegotiating the option plan every time the stock takes a nosedive. And there would be no peculiar problems of accounting, since there would be no reason to put the right of employees to trade on undisclosed information on the company's balance sheet at all: such trading would be entirely extraneous to the company's accounts.

The SEC's notoriously ineffective but highly publicized and politicized efforts to enforce insider trading laws have merely shifted the identity of the people who may trade first on undisclosed information.[22] In the process they have perhaps prevented the development of an innovative and useful compensation device and unduly encouraged a problematic second best.

Having said that, however, it must be recognized that insider trading cannot be a perfect form of incentive compensation. While many of the criticisms of the practice are vacuous or even tendentious, there are significant problems with the scheme which many of my critics hastened to elaborate. Valuable information will undoubtedly get into the hands of individuals inside and outside the company who in no sense should be compensated, usually because they will have done nothing to produce the valuable new information.[23] Another problem is that the value of the information cannot be metered to the value of the contribution of a particular individual. And, as was also pointed out, the value of new information will in many cases be a function of the financial ability of someone to trade on the information or of their ability to evaluate new knowledge.[24]

[22] David D. Haddock & Jonathan R. Macey, *Regulation on Demand: A Private Interest Model, with an Application to Insider Trading Regulation*, 30 J.L. & ECON. 311 (1987) (arguing that the existence of insider trading regulation benefited "market professionals" in the securities industry). Compare this to the problem addressed by Regulation FD which prohibited the practice of selective disclosure by issuers to securities analysts and large shareholders. Selective Disclosure and Insider Trading, Exchange Act Release No. 43,154, 65 Fed. Reg. 51,716 (Aug. 15, 2000).

[23] This argument, like the ones to follow, necessarily reflects only a partial equilibrium conclusion. There are many other positive points that must be included in a general equilibrium solution.

[24] Morris Mendelson, *The Economics of Insider Trading Reconsidered*, 117 U. PA. L. REV. 470, 488 (1969); Schotland, *supra* note 13, at 1455.

Perhaps the most common objection to insider trading as compensation is that it cannot be metered in advance as part of a compensation plan.[25] It is in its very nature a kind of all or nothing proposition, since efforts by a given corporation to police its rules about who can trade, and to what extent, will necessarily involve the company in exactly the kind of post hoc compensation calculations that the practice is argued by its supporters to avoid.[26] It is not too surprising then that, even in the heyday of insider trading in the United States before 1968,[27] no company ever announced that certain executives, but not other employees, would be allowed to engage in the practice.[28]

Indeed it is not surprising that there is no evidence that any company ever tried to develop insider trading as an explicit and integral part of an optimal compensation package. On the other hand, our understanding of corporate inaction on insider trading as compensation tells us nothing about the far more startling fact that very few companies in the United States, *prior to the SEC's involvement with the subject*, seemed to have had a rule *against* insider trading.[29] And, perhaps even more surprising, there is no significant or convincing evidence of which I am aware that any company or its spokespersons or large shareholders ever pushed for public regulation of insider trading when it was surely

[25] This criticism may not be quite a forceful as it first appears. If one would grant the distinction I referred to in my book between managers and entrepreneurs, there is still much vitality left in the information-as-compensation argument. A problem in this connection with this otherwise valuable economic concept of the entrepreneur, however, is that it allows little useful application since one can never know ahead of time who in a large company will be the real entrepreneur. Thus insider trading has to be allowed either for all or for none; there is no middle ground. While, for a variety of reasons, I would still conclude that non-regulation is the best solution, I would not deny some force to the argument of those who came down on the other side of the compensation argument.

[26] The difficulty of individual company's policing insider trading (assuming that the company thought there was something harmful in the practice) was one basis for Judge Easterbrook's conclusion that the practice should be outlawed and policed (efficiently? and at what other costs?) by public authorities, something of a non-sequitur, since there is no evidence that any company ever actually faced this problem. *See* Frank H. Easterbrook, *Insider Trading as an Agency Problem*, *in* PRINCIPALS AND AGENTS: THE STRUCTURE OF BUSINESS 81, 93-95 (John W. Pratt & Richard. Zeckhauser eds., 1985).

[27] The first significant judicial holding that insider trading was generally a violation of Rule 10b-5 was SEC v. Texas Gulf Sulphur Co., 401 F.2d 833 (2d Cir. 1968) (en banc), *cert. denied*, 404 U.S. 1005 (1971). However, SEC's warnings certainly appeared earlier. *See In re* Cady, Roberts & Co., 40 S.E.C. 907 (1961).

[28] I have for years labored – and pressured students – to come up with the outline of a workable compensation plan utilizing insider trading. But, given the constraints implied by the discussion in the text, this has proved to be a fruitless task.

[29] *See* ADOLF A. BERLE & GARDINER C. MEANS, THE MODERN CORPORATION AND PRIVATE PROPERTY 327 (1932) ("It is known that certain companies, usually under the dominance of some strong individuals, decline to permit anyone . . . whether as director or employee to conduct speculative operations in the corporate stock. On the other hand, it is certain that this is not the general practice . . . .")

widely known that it was going on.[30] The pre-*Texas Gulf Sulphur* business community was perhaps understandably silent about insider trading as a compensation device, since it probably was not really a feasible practice, but they were also – far more mysteriously – silent about any problems they might have found generally with the very common practice of insider trading. That is precisely the mystery which can now be solved with a little help from the "dog that did not bark."

PART II – THE MYSTERY

It is hardly conceivable that officers, directors and controlling shareholders, would have remained totally silent in the face of widespread insider trading if they had seen the practice as being harmful to the company, to themselves, or to investors. And it is equally inconceivable that they would not have recognized some harm if it existed. Insider trading must have been as much a way of life in the U.S. securities markets prior to the 1960's as it is known to have been at a much later date in Japan and other countries. Its existence was so common and taken for granted that there was no need for empirical or even anecdotal evidence for the practice.[31]

And yet no one of significance in the business world was ever heard to complain about the practice or much less to declare it to be the moral equivalent of murder or rape in the commercial arena.[32] This silence is a mystery that has not been noticed or addressed by

[30] An interesting bit of support for the notion that there was no concern about the "evils" of insider trading comes from the fact that, as late as 1939, the New York Stock Exchange and other leading exchanges, proposed that Section 16(b) of the Securities and Exchange Act of 1934, the only provision thought to relate even modestly to insider trading, be repealed. *Text of Exchanges' Proposals to SEC*, WALL ST. J., Mar. 15, 1939, at 11. *But see infra* note 32.

[31] Classic histories include HENRY CLEWS, FIFTY YEARS IN WALL STREET (1908) and EDWIN LEFÈVRE, REMINISCENCES OF A STOCK OPERATOR (1923). For evidence of contemporary practices in Japan and elsewhere, see Utpal Bhattacharya & Hazem Daouk, *The World Price of Insider Trading*, 57 J. FIN. 75 (2002); Jan Hanousek & Richard Podpiera, *Information-Driven Trading at the Prague Stock Exchange: Evidence from Intra-Day Data*, 10 ECON. TRANSITION 747 (2002); Richard Small, *From* Tatemae *to* Honne*: A Historical Perspective on the Prohibition of Insider Trading in Japan*, 2 WASH. U. GLOBAL STUD. L. REV. 313 (2003).

[32] There are a few exceptions, primarily academic, more notable as proof of the proposition in the text than for suggesting popular revulsion about the practice such as we find today. *See* BERLE & MEANS, *supra* note 29, at 223-26, 326 (condemning insider trading as an abuse of access to information in the official capacity and treating inside information as the collective property of the shareholders); FRANK P. SMITH, MANAGEMENT TRADING: STOCK-MARKETS PRICES AND PROFITS (1941) (applying economic analysis to

modern writers – until now. What can possibly explain this puzzling behavior? Perhaps the practice was thought, as it is today, to be so heinous that no one wanted even to mention it in polite company, as the words "cancer" or "incest" used to be treated. But there is little evidence that prior to the SEC's efforts in this regard, insider trading had anything like the connotation of extreme immorality implied by this theory. There is no evidence of any general revulsion by the business community or the public towards insider trading in those "good old days".

One might argue that the adoption of the securities laws of the New Deal, with their ostensible "full disclosure" philosophy, reflected a general dissatisfaction with the state of affairs in securities markets, including insider trading. But this would be a serious misreading of that history, since that legislation, like most other New Deal regulation, was aimed primarily at preventing or suppressing competition, regardless of what incidental rationalization may have been offered the public for political reason.[33]

trading by corporate insiders but ultimately condemning insider trading on nonpublic information); H.L. Wilgus, *Purchase of Shares of Corporation by a Director from a Shareholder*, 8 MICH. L. REV. 267, 297 (1910) (arguing that insider trading "does more to discourage legitimate investment in corporate shares than almost anything else"). More to the point, the Pujo Bill, a comprehensive federal securities statute proposed in 1913 after well-publicized congressional hearings, had a provision regulating trading by corporate officers and directors. H.R. REP. NO. 62-1593, at 171-72 (1913). There were even business witnesses who criticized the practice of insider trading (but did not endorse the proposed regulatory measures) during the subsequent Senate hearings in 1914. *See Regulation of the Stock Exchange: Hearings on S. 3895 Before the Senate Comm. on Banking and Currency*, 63d Cong. 152-53, 267-68 (1914). But this was not the central theme of the hearings, and nothing came of the provision regulating insider trading. Again, the failure of any follow-up or of any increased concern after the hearings seems to strengthen the point that there was no serious public concern with insider trading prior to *Texas Gulf Sulphur*.

Perhaps the same can be said about the "minority" common law view that insider trading was improper (though no early case even involved an anonymous transaction on an exchange). *See* WANG & STEINBERG, *supra* note 2, §16.2.3.2.

Admittedly, Section 16(b) of the Securities and Exchange Act of 1934 was sold to the public as an anti-insider trading provision, but its reach was so limited and its focus on manipulation so great, that it was never thought of as a comprehensive effort to deal with the subject. Even so, the New York Stock Exchange sought repeal of that provision only a few years later. *See supra* note 30.

[33] *See* ELLIS HAWLEY, THE NEW DEAL AND THE PROBLEM OF MONOPOLY (1966). Hawley found a real anti-competition motive but a different, publicly stated purpose, in connection with the creation of every New Deal agency except the SEC. The exception Hawley thought he found was clearly an error. *See also* Henry G. Manne, *Economic Aspects of Required Disclosure under Federal Securities Laws*, *in* WALL STREET IN TRANSITION: THE EMERGING SYSTEM AND ITS IMPACT ON THE ECONOMY 21, 31-36 (Henry G. Manne & Ezra Solomon eds., 1974) (discussing possible anticompetitive motives and consequences of the federal securities laws); Henry G. Manne & Joseph J. Bial, *Questioning the SEC's Crusades*, REGULATION, Winter 2001, at 8 (hypothesizing a restraint-of-competition motive behind the SEC's initial sally into the subject of insider trading in the 1960's).

And while it is true that there would have been considerable "free rider" problems if any one company had tried to enforce a rule against insider trading, again this would not explain the universal silence on the subject. Indeed, if this were part of the explanation, it is much more likely that we would have heard a public clamor for government assistance with the problem rather than total silence.

It might be argued that, while there was universal disapproval of insider trading, the managers, who were the chief perpetrators, would naturally keep silent about their transactions. This explanation would apply equally to all top managers, board members and controlling shareholders, and thus it could theoretically explain the universal silence on the subject. But this hypothesis is flawed. Top managers or controlling shareholders could not have been the only individuals with access to undisclosed information, and they would have no reason to "cover up" the trading of others. Accountants would have valuable financial information before the CFO; salespeople and plant foremen would know of speed-ups in orders and production before the COO; and outsiders would know of pending merger offers before the CEO. Even mid-level executives, to say nothing of secretaries, elevator operators, and office boys, would certainly on occasion have had access to tradable information. Anyone might indeed have had some reason to remain silent about his or her own trading, but that would not explain the silence of the top managers about underlings' trades.

Or consider the matter of trading on bad news by various employees of a company. One would expect top managers to scream like stuck pigs if underlings traded on information which the superiors did not yet have and which would lower stock price. Such behavior could jeopardize managers' own job security. It is conventional wisdom that top managers of publicly-held companies do everything they can to put a rosy hue on any public disclosures and even on the company's financial accounting. Clearly, their interest in survival, as affected by the impact of bad news on the share price, would prevail over any wish to hush up insider trading by others. Thus we could hardly expect that to explain their total silence on the subject, since, in this case, insider trading might be harmful to them.

But what if the top managers were making so much money from trading on undisclosed information themselves that they were willing to acquiesce in underlings' participation in order to avoid killing the gold-bearing goose? This too fails on close examination. Top managers may well have had access to some valuable information before its trading value was frittered away by underlings, but controlling shareholders who were not directly involved in the management of the company would not. If they were being cut out by their managers, there is no reason to believe that they would not complain about it or at least cite it as a reason for putting in new managers. Of course, they too could all have been part of an enormous conspiracy of silence,[34] but the odds are strongly against that.

So it is highly unlikely that corporate managers of the relevant period thought there was a problem with the practice at all. On the other hand, if some (net) advantage to the practice existed of which managers then were even dimly aware, then their silence might well imply approval of the practice. Recognition of some benefit to insider trading would still not necessarily result in public discussion of the topic. Silence might still follow because there was no market pressure, and no social, intellectual, or psychological incentive, to open the issue publicly. If any disadvantage from insider trading had been recognized by important business spokespersons of the day, silence would have been unlikely. Conversely silence could well have been the consequence of approval.[35] Our remaining task then is to see if there was some benefit to the managerial function from insider trading other than the compensation argument which we have already discounted.

PART III – THE MYSTERY SOLVED

[34] For the farfetched plea for regulating insider trading in order to prevent managers from using inside information to "bribe" dominant shareholders to refrain from monitoring (certainly a kind of conspiracy theory), see Ernst Maug, *Insider Trading Legislation and Corporate Governance*, 46 EUR. ECON. REV. 1569 (2002).
[35] We have already mentioned that it is highly unlikely that they were merely unaware of the practice or that they could not recognize either an advantage or disadvantage from it.

One possible solution to this query is suggested by a surprising source, Friedrich Hayek's classic *The Use of Knowledge in Society*.[36] In that piece Hayek advances the notion that the most important task of an economic system is not the efficient allocation of goods and services. If the necessary knowledge of relative values were available, those calculations would not in theory be difficult. Though these observations are made in the context of a discussion of central economic planning, his language, as we shall see, seems equally applicable to some of the problems of managing a large corporate enterprise.

The real problem for the socialist planner, as Hayek identified it, is how to manage the necessary information in practice, since "the knowledge of circumstance . . . never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess."[37] Hayek's argument that "[t]he various ways in which the knowledge on which people base their plans is communicated to them is the crucial problem for any theory explaining the economic process"[38] applies equally well to the problem of managing a large corporation. In other words the essence of management is not the substance of the information needed for decisions but rather the process by which information which is somewhere "out there" gets communicated to the decision maker.

Hayek compared "central planning," which, "by its nature cannot take direct account of . . . circumstances of time and place" to "decentralized competition," in which the decisions are left to "the man on the spot."[39] The parallels to the managerial problem are very suggestive even if not exact. Top-level managers are regularly beset with enormous problems of getting appropriate, truthful, and timely information for making decisions,[40] decisions which in many particulars are similar to those a central economic planner

[36] F.A. Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519 (1945).
[37] *Id.* at 519.
[38] *Id*. at 520. Hayek makes a distinction between scientific knowledge and the kind of knowledge of the "particular circumstances of time and place" which by its nature cannot enter into statistics such as a central planner would need, *id.* at 524, or, it might be argued, into accounting data of the sort to which the SEC gives preeminence.
[39] *Id.*
[40] For a brief summary of the types of information-transmission problems corporate managers confront, see Stephen M. Bainbridge, *Privately Ordered Participatory Management: An Organizational Failures* Analysis, 23 DEL. J. CORP. L. 979, 1013-14 (1998). But the "management" literature on the subject of information flows to decision-makers is enormous, clearly reflecting the seriousness of the problem.

would have to make. And, while the corporate manager, unlike the central planner, cannot leave decisions up to "the man on the spot," Hayek's euphemism for a market process, the manager may have access to a related type of information source unavailable to the socialist planner.

Information comes to top managers, of course, in many forms and through various devices. From within the company, the decision-makers might receive accounting and statistical data and written and oral reports from subordinates. From outside the company, the managers might enlist various kinds of consultants, auditors, or attorneys. Information can also be gleaned from public disclosures, paid informants, or even books. But even assuming (a real stretch to be sure) the correctness and the relevance of all information obtained through these devices, one critical failing will be found in every one of them. Anything other than information based on first-hand experience (a very limited possibility) will necessarily be somewhat "stale." This is not to deemphasize the fact that much of the information will be erroneous, irrelevant, and/or biased. It is merely to point out that no matter how correct the substance of the information, it will always take time for it to reach the decision maker, a delay that in some cases can prove fatal. Information of this sort will always lack the immediacy of what Hayek referred to as "the knowledge of the particular circumstances of time and place."[41]

For Hayek, the solution in the case of economic organization was for diffused decision makers to utilize the market price of a commodity in their decisions, since that price contained significant information that diffused individual (private) planners need in order to make intelligent decisions. The price of a good or service or commodity was always immediately available and, as a guide to individual choice, inherently correct.[42]

But obviously the manager is not a central economic planner, and diffused competition is not usually a feasible alternative way to organize the administration of a single firm. Nonetheless, suggestive similarities remain. As Hayek showed, "The most significant

[41] Hayek, *supra* note 36, at 524.
[42] *Id.* at 526.

fact about this system is the economy of knowledge with which it operates, or how little the individual participants need to know in order to be able to take the right action."[43]

Consider the plight of a top manager of a corporation considering the expansion of a major division of the company. He has probably received rosy reports about the division's performance even though, perhaps contemporaneously, the price of the company's stock is in sharp decline. We will make the simplifying assumption that all other divisions are known to be steady and the general business conditions have not changed.[44] Clearly that manager has some unbiased information that things are not all they appear in his reports to be, and prudence dictates finding out what is really wrong with that division before approving the expansion.[45]

A scenario like that would not be realistic unless someone with information more reliable than that given to the top executives was trading in the company's stock. The manager would not care who got that information or how that person procured it; he would not care whether the trader was an insider or an outsider. He would not care whether the person was a file clerk or an investment banker. What would be important is, first, to stop the planned expansion; second, to find out what was wrong with the division; third to fix the problem; and possibly a fourth, take steps to deal with the producers of the erroneous reports. Each of these represents an important managerial action, and each of them depends on the information first gained through watching the stock's price.[46]

[43] *Id*. at 526-27. "The marvel is that . . . without an order being issued, without perhaps more than a handful of people knowing the cause, tens of thousands of people whose identity could not be ascertained by months or investigation, are made to use the material or its products more sparingly; *i.e.*, they move in the right direction." *Id.* at 527.
[44] This example incidentally strongly supports the use of so-called "tracking" stocks to aid in corporate management. For an example of exactly this scenario, see Joel T. Harper & Jeff Madura, *Sources of Hidden Value and Risk Within Tracking Stock*, FIN. MGMT., Autumn 2002, at 91. But the scenario, and the others following, is much closer to the ideas implicit in the modern theory of "prediction" markets, the creation of virtual markets in almost any kind of future state. The system has until recently been used primarily to make election outcome predictions, but it is increasingly finding a place in the corporate world. *See infra* notes 54-55.
[45] *See* James B. Kau et al., *Do Managers Listen to the Market?*, 14 J. FIN. INTERMEDIATION (forthcoming 2005) (offering empirical evidence that managers "listen to the market," as they are more likely to cancel investments or merger plans when the market reacts unfavorably to the related announcement).
[46] The prototypical New Yorker cartoon of a mogul watching the ticker tape in his office implied that he was "playing the market" on company time. But the grain of truth in the office presence of a ticker tape had to be that the top manager was watching primarily his own company's stock price.

Or consider a manager faced with a well-publicized acquisition decision and a stock price that has declined more than such an acquisition should occasion. He should recheck all the numbers and pause before completing the acquisition. Any other course threatens serious litigation, or worse, later on. The information being impacted into the share's price may have come from insiders or outsiders, but, in any event, someone is betting their own money on the validity of numbers quite different than those the executive has been given.[47] There is great peril in ignoring such information.[48]

An additional scenario involves a situation that must be common in high-tech fields or others with rapidly changing technology. Suppose that a publicly traded company is riding high with a dominant product in its particular market but not a product that is fully protected by its patents against substitutes. Orders are high, earnings estimates are generous, morale among employees is good, consumer response is enthusiastic, and the managers are about to cash in on their stock options. Just then, for no reason known to the company's top management, the stock plummets. It is in fact being shorted[49] by employees of another company which has developed a far superior substitute product.[50]

Or consider a case of substantial embezzlement and accounting fraud. Top managers notice an otherwise mysterious decline in stock price. This can set off alarms that ultimately lead to discovery of the fraud. But why did the stock price decline?

[47] Yuanzhi Luo, *Do Insiders Learn from Outsiders? Evidence from Mergers and Acquisitions,* 60 J. FIN. (forthcoming 2005) (offering empirical evidence that market reaction to an M&A announcement predicts whether the companies later consummate the deal and that merging companies appear to extract information from the market reaction and later consider it in closing the deal).

[48] Or, it might be added, in not having it available because insider trading laws have prevented someone with the relevant information from trading or disseminating the information. But I digress; the point of the text is merely that the stock market may convey valuable managerial information either not available or not available in timely fashion anywhere else. A manager might be at some pains to preserve such a valuable source of information and, to repeat the point of the text, not be heard to complain that someone has "immorally" traded on inside information.

[49] The feasibility of short-selling and the existence of options or futures markets generally improve the process of aggregating information by allowing more individuals to profit on their information and making the market for the underlying security more "complete" and hence more efficient. *See* Stephen Figlewski & Gwendolyn P. Webb, *Options, Short Sales, and Market Completeness*, 48 J. FIN. 761 (1993).

[50] While there is a great debate as to whether this trading would run afoul of Rule 10b-5 – it is not trading by an *insider* trading in the usual sense – this example nonetheless still serves to make the point about managers being dependent on stock prices for information they may be unable to secure elsewhere. *See also* Ian Ayres & Joe Bankman, *Substitutes for Insider Trading*, 54 STAN. L. REV. 235 (2001).

Obviously someone in the know about the fraud decided that stock trading profits were better than the "honor" of whistle-blowing, and, at least this way, other employees of the company may never know who the "snitch" was, thus avoiding various personal embarrassment and recriminations. But why would the top managers care who did the trading or even how those traders knew about the fraud? That knowledge would not be required (nor cheap to acquire) before the managers could take necessary corrective action.

This example suggests a more general use of stock price in the day-to-day work of top administrators. If the managers could assume that informed trading was taking place whenever it became profitable – in other words, if managers had acted as though the stock market were "efficient" long before the idea of an efficient market was articulated – they could also have used stock price changes as a kind of confirmation, albeit "noisy," of their own internal financial and other reports. In other words, general insider trading would go a long way towards keeping various functionaries on their toes and honest, since every major error or act of dishonesty would become a potential source of trading profit for someone else in the organization who knew about the problem.[51]

That last idea in turn suggests yet another reason for silence about insider trading, this time by controlling shareholders. The problem of monitoring non-controlling managers was certainly recognized by investors and entrepreneurs long before Berle and Means popularized the notion of a separation of ownership and control. Manifestly, no agency relationship of this kind is feasible without some device for monitoring the quality of work done by the agents. Are large investors who do not directly manage their companies merely to wait until they receive obscure quarterly or annual financials before making decisions about the quality of their managers? And even if they serve or have

[51] It goes without saying that we are discussing those cases in which the trading is sufficient to move the price of the company's shares. This implicates the great debate about the effectiveness of insider trading to move share prices. The emerging consensus in the literature seems to be that this mechanism functions rapidly with few trades by insiders necessary to create a substantial movement in the indicated direction. *See supra* note 10. Probably this effect would vary with the size and liquidity of the market for the particular company's shares, the number of analysts following the shares, and other factors. But the fact that the scheme may not function well to solve every managerial information problem is clearly no reason for not allowing it generally for those situations in which it is useful.

representatives on the board, can they be assured of speedy and correct information about the real value of managerial decision making? This is the agency cost problem *par excellence*, and a feasible solution is to allow, nay encourage, insider trading in order to assure as fast and accurate conveyance of information as possible via stock price.[52]

One would guess that these investors would want every bit of market price information they could possibly get, whether it came from stock trading by insiders or by the devil. With all the difficulties non-managing shareholders will have in securing adequate information to protect their investment, it certainly comes as no surprise to learn that large shareholders are rarely heard to complain about insider trading. What is more surprising is that they and others with concurrent interests did not mount a more successful effort to thwart the SEC's campaign against the practice.[53]

The various examples given above help explain why managers and others could have been expected to remain silent about insider trading in its heyday. But these same scenarios are also significant because today they could represent actual corporate experiments with so-called "virtual" or "prediction" markets.[54] These schemes typically involve the use of an internally constructed mock or virtual stock market or derivatives markets to assess a specific population's valuation (prediction of success) of, for example, a new product or managerial decision.[55] The practice is based on the Hayekian

[52] This insight makes particularly ironic that Berle and Means complained that managers of large corporations might engage in insider trading. *See also* Kau, et al., *supra* note 45, at 33-34 (offering empirical evidence that "managers are more likely to listen to markets when a higher proportion of the firm's shares are held by blockholders").

[53] *But see supra* note 30 (showing some concern about Section 16(b)). It may well be the SEC's high-handed method of developing a general rule against insider trading did not allow for such public expression of concern after *Cady, Roberts*. *See* Henry G. Manne, *Insider Trading and the Administrative Process*, 35 GEO. WASH. L. REV. 473 (1967). And this may well be the reason the SEC took the approach that it did.

[54] For an excellent description of internal markets for "securities" predicting future sales, success of a certain product, or supplier behavior in such companies as Eli Lilly, Hewlett-Packard, and Microsoft, see Barbara Kiviat, *The End of Management?*, TIME (*Inside Business* Bonus Section), July 12, 2004.

[55] *See, e.g.,* KAY-YUT CHEN & CHARLES R. PLOTT, INFORMATION AGGREGATION MECHANISMS: CONCEPT, DESIGN, AND IMPLEMENTATION FOR A SALES FORECASTING PROBLEM (Cal. Inst. of Tech., Soc. Sci. Working Paper No. 1131, 2002). The paper discusses, among other issues, the question of whether the prediction-market mechanism can identify knowledgeable individuals and provide an incentive for them to participate, *id*. at 8-9, a problem which does not exist in a real legal market for inside information. *See also* AJIT KAMBRIL & ERIC VAN HECK, MAKING MARKETS: HOW FIRMS CAN DESIGN AND PROFIT FROM ONLINE AUCTIONS AND EXCHANGES 149-155, 159-61 (2002) (discussing how prediction markets can aid corporate

idea that markets are better organizers of information and predictors of the future than are individuals.

Prediction markets in the corporate world are designed to mimic as nearly as possible the conditions of a real market. Thus they work more effectively if the individuals betting use their own money and trade to make more money, just as in real markets. The idea is that people with the greatest confidence in the validity of their information will bet more on that supposition than will those who lack such confidence, and the aggregate betting will produce a "price" outcome much more accurate than any one individual could produce, just as Hayek suggested.[56] There are problems with getting the incentive structure right in virtual markets, problems that do not exist in real markets, but the results to date are nonetheless dramatically persuasive of the valuative and predictive powers of such markets.[57]

The similarities and overlaps between the Hayekian "use of knowledge," virtual markets, and insider trading should now be apparent to anyone. They each involve, actually or virtually, one and the same thing, namely a market for information. And this market inevitably performs far more successfully than would most any non-market administrative process, whether the latter be socialist central planning, marketing surveys by polls, or mandated financial disclosures such as required by the SEC. Certainly it should be clear now why corporate managers and others with a real interest in managerial efficiency would not have complained about insider trading when it was widely recognized as a standard practice. Their jobs were – and still are – much simplified with

decision-making); Justin Wolfers & Eric Zitzewitz, *Prediction Markets*, J. ECON. PERSP., Spring 2004, at 107 (summarizing academic literature on prediction markets).

[56] *See also* JAMES SUROWEICKI, THE WISDOM OF CROWDS 23-39 (2004) (emphasizing the importance of diversity of beliefs among the participants in a virtual or a real market for the "magic" of the aggregation of disparate valuations to work). This is another reason why the exclusion of insiders from the stock market guarantees a less efficient market than would exist otherwise.

[57] Readers are most apt to be familiar with the Iowa Electronic Markets for betting on political campaigns. These have proved to be considerably more successful than any polling device for predicting the outcomes of American elections. *See* Iowa Electronic Market Website, *at* http://www.biz.uiowa/iem (last visited ___). The use of prediction markets made headlines a few years ago when the Department of Defense DARPA office tried to use a virtual market to predict terrorist activities. A popular outcry that this allowed "betting" on terrorism and carried moral hazards forced DOD to cancel the project. *See* Robin Hanson & Ryan Oprea, Manipulators Increase Information Market Accuracy 2 & n.2 (July 2004) (unpublished manuscript, on file with author), available at http://hanson.gmu.edu/biashelp.pdf (last visited ___).

a free and open information market for all possible participants.[58] There never was any need, therefore, to include insider trading in executive compensation packages.[59] Even in this day of regulated, distorted, and corrupted information flows, the smart managers must still keep a weather eye out for unexpected changes in their company's stock price.[60]

The illustrations used above are considerably oversimplified and describe a kind of event that does not occur every day. In fact, the truly dramatic case of important information being conveyed almost instantaneously by the stock price may be one of the rarer events in a top manager's career. Even so, there would not have to be many such occasions, experienced directly or only heard about, before managers would understand the desirability of having insider-trading influenced stock prices available. So managers, directors, and large shareholders may have had little or no incentive ever to talk about insider trading as an important managerial tool and certainly none to condemn it. A culture of silence on the subject seems the most likely result. The mystery posed earlier in this paper has now been solved, and a new defense of insider trading has been described.

[58] So much for the argument that it would be "unfair" if an office boy, a janitor, or a secretary were allowed to trade on information that was fortuitously picked up while on the job. *Cf.* United States v. O'Hagan, 521 U.S. 642 (1997) (holding liable a law firm partner not personally representing the company whose options and shares he traded). Management's interest would be just as great in having these low functionaries trade on new information as the highest level executive, so long as their trading added to the accuracy of the stock's price. It's reliable price-effect information they are after, not some puerile ideal of "fairness." This is not to say, of course, that there may not be situations in which it will be in a company's interest to delay information reaching the market, say where this would be valuable mainly to competitors. In such a case, however, we could expect the managers to take whatever steps were appropriate to guard the information and not to rely on a general rule against insider trading to cure a rarely occurring problem.

[59] This is not to say, however, that there may not have been special cases where inventors or other entrepreneurs were explicitly allowed, as part of their compensation package, to trade on the value of the information they produced. This might have been especially appropriate to cover such cases as pharmaceutical scientists working on new drug products and betting on their success. A company could then get the advantages of a prediction market with the additional advantages of an appropriate form of incentive compensation. This is not the same as a generalized argument for insider trading as part of all compensation packages, which, as we have seen, entails considerable operational problems.

[60] It is an open question just how much SEC regulation has distorted the market for valuable information, and the matter has not been addressed by empirical research. Still, we do know that enforcement of insider trading laws is spotty and ineffective, but whether it is ineffective enough that we still have substantially as reliable and accurate a market for information (net of all the administrative costs of the system) as we would in the absence of the regulation is anyone's guess.

PART IV – THE WRAPUP

There are arguments against this new hypothesis in support of legalized insider trading. First, there is the practical point that the stock market is notoriously volatile, and a manager may be hard pressed at any give moment to know whether the stock price change he is witnessing is a result of informed trading or of so-called "noise" trading.[61] "Noise" will significantly complicate the task of ferreting valuable insights out of a stock's price, and on occasion noise might make it impossible to infer any valuable information from a stock price. But the ability to analyze stock price changes should probably be seen as another desirable skill for managers. The fact that noise may create some uncertainty with this kind of information and on occasion may make it useless certainly does not imply that this information should never be available to managers as well-enforced insider trading laws in effect would do.

A related point is that stock markets are always subject to manipulation and that managers relying on stock price to gain new information will regularly be "confused" by others trying to convey false information.[62] While this observation seems plausible, it fails to note that alternative schemes of transmitting information are equally if not more subject to the same risks. Even more to the point, however, this argument does not integrate the possibility of "counter manipulators," who can profit by trading on the truth regardless of what their colleagues are up to. All indications are that significant stock price manipulation is extremely difficult to manage, and, ironically, it may actually improve the functioning of the market.[63] This is similar to the point made earlier about the value of insider trading on bad news. In both cases allowing an unfettered market in

[61] Aggregate market or industry price movements would not obviously have the same value since a general price level change would not implicate the kind of information we are concerned with here.

[62] For some suggestion of this kind, see Saul Levmore, *Simply Efficient Markets and the Role of Regulation: Lessons from the Iowa Electronic Markets and the Hollywood Stock Exchange*, 28 J. CORP. L 589, 600 & nn.36-37 (2003). Actually Levmore, in a somewhat different context, skirts near to ideas proposed in this paper, but he seems reluctant to acknowledge any valuable role for insider trading. *Id.* at 588-89. For important studies of the problem of manipulation, see Robin Hanson et al., *Information Aggregation and Manipulation in an Experimental Market*, 56 J. ECON. BEHAV. & ORG.; Robin Hanson, Foul Play in Information Markets (Jan. 2005) (unpublished manuscript, on file with author), *available at* http://hanson.gmu.edu/foulplay.pdf (last visited ___).

[63] *See especially* Hanson & Oprea, *supra* note 57. Levmore also notes that profits can be made by counter manipulators and that ultimately an equilibrium may develop. Levmore, *supra* note 62, at 601.

information will have salutary effects unheard of in connection with regulatory "disclosure."

There is a special advantage that virtual markets have over real markets powered by informed trading. They can be carefully tailored to a very specific query such as "how will a particular new product fare in the market?" A generalized market for all information, like the stock market, cannot normally perform with this degree of specificity, but on occasion its message will be specific and clear. The fact that this is not always the case is simply one of the conditions of the marketplace; it is not a drawback to insider trading as such.

Of course, since the argument for allowing insider trading presented here is brand new and largely theoretical, we have little direct empirical or even anecdotal evidence to support it. However, we do have a rapidly growing number of reports of experimental work in prediction markets, none of which, needless to say, involve actual trading of stocks on a stock exchange. And a number of new questions for exploration come to mind. Do managers follow their company's stock price with an obsession suggesting that it contains really valuable information for them (above and beyond their own direct interest in stock-price-related compensation plans)? Do we have any evidence that problems have actually been discovered through this mechanism? Are there other factors that would make stock price monitoring a losing proposition, such as noise, unreliable data, more efficient alternative information-transfer devices, or excessive time or other costs associated with the practice?

Even after the SEC began its *in terrorem* campaign against insider trading and required compliance officers nearly everywhere, few top executives of large corporations have made ferreting out insider trading a top priority of their administrations. In other words, though the silence on the topic has not been as complete as it was before *Texas Gulf Sulphur*, complaints about the practice have still not been deafening. Most of the roar comes from the SEC and its supporters in the academic and media worlds. So, we might wonder, does this signify acquiescence by the corporate elite in the SEC's campaign

against insider trading or does it merely mean that the campaign has been mainly bluster and headlines with an extraordinarily low enforcement capability?[64]

All of these are interesting questions that may be asked about the Hayekian hypothesis for insider trading. Possibly a new area of scholarly research has been opened. The hypothesis seems to have enough "bite" that it will have to be integrated into the general argument about insider trading that continues to rage. If the issue were a close one before this notion appeared, this could tip the balance, and we may even begin to see some advocacy of insider trading legality from those whose interest, professional or academic, is in making the management of large companies more efficient.

PART V – CONCLUSION

Stock trading by any informed individuals can produce information that may be extremely valuable to managers of publicly-held companies. This may result in benefits that are even greater than those that were claimed for insider trading as a device to make the stock market more efficient. That older argument related efficiency of capital markets almost entirely to activities stock-market activities such as investing, stock trading, or transactions in control.[65] Now we have added a corporate-governance dimension to the insider trading debate. Indeed when we view the topic in Hayekian terms, it is hard to escape the conclusion that knowledgeable trading in an earlier era did and probably still does aid considerably in the functioning of the large corporate system. And a new question arises whether virtual markets can provide a meaningful alternative to overt legal insider trading, if indeed regulation of that trading has even significantly reduced its informational benefit.

[64] Ajeyo Banerjee & E. Woodrow Eckard, *Why Regulate Insider Trading? Evidence from the First Great Merger Wave (1897-1903)*, 91 AM. ECON. REV. 1329 (2001); Michael P. Dooley, *Enforcement of Insider Trading Restrictions*, 66 VA. L. REV. 1 (1980); Javier Estrada & J. Ignacio Peña, *Empirical Evidence on the Impact of European Insider Trading Regulation*, 20 STUD. ECON. & FIN. 12 (2002); David Hillier & Andrew P. Marshall, *Are Trading Bans Effective? Exchange Regulation and Corporate Insider Transactions around Earnings Announcements*, 8 J. CORP. FIN. 393 (2002); Jeffrey F. Jaffe, *The Effect of Regulation Changes on Insider Trading*, J. BELL J. ECON. & MGMT. SCI. 93 (1974) H. Nejat Seyhun, *The Effectiveness of Insider Trading Sanctions*, 35 J.L. & ECON. 149 (1992); Arturo Bris, Do Insider Trading Laws Work? (Feb. 2003) (unpublished manuscript, on file with author).

[65] However, the efficient market concept also has some relevance for the executive compensation debate. *See* Carlton and Fischel, *supra* note 14.

There is a lot of evidence that insider trading simply went underground[66] and that no substitute is really needed. SEC enforcement of its rules is a mess. It is arbitrary, capricious, political, and extremely inefficient. Nonetheless illegal insider trading, no matter how robust, is bound to be more expensive and less efficient than the legalized variety, and so it is not surprising that other devices might arise for surmounting the SEC's effort to hold back this tide. If the actual stock market cannot be used to gain certain information because of insider trading restrictions, then managers (though, alas, not outside investors) can create a virtual market to provide some of the same information. Virtual markets even have some benefits lacking in the actual stock market, such as the ability to segregate out specific causes of share-price changes. But virtual markets can never be a complete substitute because of the design and motivational problems mentioned earlier. But they can ameliorate some of the costs of the SEC's campaign against insider trading, and we can expect them to flourish.[67]

[66] *See supra* note 64.

[67] At least until the SEC decides that a virtual market operated with real money is close enough to the real thing to merit regulation. For some possible foretaste of this, see SEC v. SG, Ltd., 265 F.3d 42 (1st Cir. 2001) (ruling that trading in shares of "fantasy" companies on the Internet – perhaps easily distinguished from a prediction market – is still covered by the federal securities laws).

Insider Trading Laws and Stock Markets Around the World:

An Empirical Contribution to the Theoretical Law and Economics Debate

Laura Nyantung Beny*

ABSTRACT

The primary goal of this Article is to bring empirical evidence to bear on the heretofore largely theoretical law and economics debate about insider trading. The Article first summarizes various agency, market, and contractual (or "Coasian") theories of insider trading propounded over the course of this longstanding debate. The Article then proposes three testable hypotheses regarding the relationship between insider trading laws and several measures of stock market performance. Exploiting the natural variation of international data, the Article finds that more stringent insider trading laws are generally associated with more dispersed equity ownership, greater stock price accuracy and greater stock market liquidity, controlling for various economic, legal and institutional factors. These results cast doubt on pure "Coasian" theories of insider trading and suggest the appropriate locus of academic and policy inquiries about the efficiency implications of insider trading and its regulation. Further empirical research is necessary, however, to conclusively resolve the perennial insider trading debate.

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I. INTRODUCTION

The law and economics debate about the desirability of prohibiting insider trading—trading by corporate insiders on material, non-public information—is both long-standing and unresolved. The early legal debate centered on whether insider trading is unfair to public investors who are not privy to private corporate information.[1] However, the fairness inquiry was malleable, lacked a rigorous theoretical framework, and therefore did not yield coherent or practical policy prescriptions.[2] Professor Henry Manne abruptly shifted the debate to an efficiency inquiry with his now classic 1966 book, *Insider Trading and the Stock Market*. In *Insider Trading and the Stock Market*, Manne argued that, contrary to the prevailing legal and moral opinion of the time, insider trading is desirable because it is economically efficient.[3] Professor Manne's controversial thesis abruptly shifted the focus from fairness to the economics of insider trading and precipitated an intense debate in the law and economics literature about the efficiency implications of insider trading.[4] The central question in the law and economics debate is whether insider trading is economically inefficient and thus ought to be subject to government regulation or, conversely, whether it is economically efficient and thus ought not to be regulated. Law and economics scholars sit on both sides of the fence. Some even straddle the fence, for example, by arguing that even if insider trading might be inefficient (bad) for some firms, it might be efficient (good) for other firms, and therefore the law should enable corporations and shareholders to address insider trading via private contract on a case by case basis. Without question, the law and economics approach has advanced the legal policy debate about insider trading, but it has not achieved consensus on fundamental questions.

The law and economics literature on insider trading is plagued by a few significant shortcomings. Like the fairness inquiry, the efficiency inquiry is rather elusive, as no single locus of efficiency focuses the scholarly debate. Rather, the investigations vary from examinations of the narrow effects of insider trading on efficiency at the firm level (agency theories of insider trading) to work studying the broader effects of insider trading on stock market efficiency (market theories of insider trading).[5] It is possible, for

1. *See, e.g.*, Roy A. Schotland, *Unsafe at Any Price: A Reply to Manne, Insider Trading and the Stock Market*, 53 VA. L. REV. 1425, 1438 (1967) (discussing the fairness of insider trading and its effect on the public's confidence in the stock market); *see also* Victor Brudney, *Insiders, Outsiders, and Informational Advantages Under the Federal Securities Laws*, 93 HARV. L. REV. 322, 334 (1979) (stating that "the antifraud provisions [of U.S. securities laws] are said to serve principally a protective function—to prevent overreaching of public investors—and only peripherally an efficiency goal").

2. U.S. insider trading law doctrine demonstrates this confusion and ambiguity. *See generally* Stephen M. Bainbridge, *Insider Trading*, *in* III ENCYCLOPEDIA OF LAW & ECONOMICS 772, 784-91 (Boudewin Bouckaert & Gerrit De Geest eds., Edward Elgar Publishing 2000) (attempting to determine if insider trading injures investors); Stephen M. Bainbridge, *The Insider Trading Prohibition: A Legal and Economic Enigma*, 38 FLA. L. REV. 35, 55-61 (1986) (defining fairness in "three principal ways"); Frank H. Easterbrook, *Insider Trading, Secret Agents, Evidentiary Privileges, and the Production of Information*, 1981 SUP. CT. REV. 309, 309-39 (using three insider trading cases to discuss policy questions).

3. HENRY G. MANNE, INSIDER TRADING AND THE STOCK MARKET 99-104 (1966).

4. *Id. See generally* Jonathan R. Macey, *From Fairness to Contract: The New Direction of the Rules Against Insider Trading*, 13 HOFSTRA L. REV. 9 (1984) (describing the evolution of U.S. insider trading law doctrine from a fairness focus to a contractual/property rights focus).

5. *See* Mark Klock, *Mainstream Economics and the Case for Prohibiting Inside Trading*, 10 GA. ST. U.

example, that insider trading may enhance efficiency within the firm, but that markets in which insider trading is permitted are thereby less efficient in the aggregate. Researchers who focus their studies at different levels and report different results could be talking past each other. A second, major deficiency of the law and economics literature on insider trading is that it is insufficiently grounded in empirical evidence, although, as Professors Carlton and Fischel note, the "desirability of [regulating] insider trading is ultimately an empirical question."[6] Rather, beginning with Professor Manne's seminal argument, law and economics scholarship on insider trading has been largely speculative and theoretical. Finally, until recently, the existing empirical literature on insider trading has been American-centered.[7] Few scholars have sought to examine the impact of insider trading rules in a comparative context. This is important because, without variation in insider trading rules, one cannot test causal hypotheses.

This Article, unlike most of the existing legal scholarship on insider trading, is empirical and comparative.[8] The main aim is to determine whether insider trading laws are systematically related to stock market performance across countries. To that end, the Article formulates three testable hypotheses regarding the relationship between insider trading laws and equity ownership, the informativeness of stock prices, and stock market liquidity, respectively. These hypotheses are that countries with more stringent insider trading laws will have: (a) more widespread equity ownership; (b) more informative stock prices; and (c) more liquid stock markets, other things equal. To test these hypotheses, I constructed a unique index of the stringency of insider trading laws for thirty-three countries as of the mid-1990s. Using multivariable regression analysis,[9] I find that countries with more stringent insider trading laws have more dispersed equity ownership; more liquid stock markets; and more informative stock prices, consistent with the formulated hypotheses. Because of the small number of available cases and the impossibility of controlling for all potentially relevant variables, these conclusions must be regarded as tentative, but they are nonetheless significant. If insider trading laws are

L. REV. 297, 299 (1994) (focusing on the "public policy arguments over insider trading").

6. Dennis W. Carlton & Daniel R. Fischel, *The Regulation of Insider Trading*, 35 STAN. L. REV. 857, 866 (1983). For early empirical evidence on the effects of insider trading laws in the United States, see Jeffrey F. Jaffe, *The Effect of Regulation Changes on Insider Trading*, 5 BELL J. ECON. & MGT. SCI. 93 (1974); H. Nejat Seyhun, *The Effectiveness of Insider-Trading Sanctions*, 35 J. LAW. & ECON. 149 (1992).

7. *See* Jaffee, *supra* note 6; Seyhun, *supra* note 6.

8. For some recent comparative studies of insider trading laws, see sources cited *infra* note 204. The Article contributes to the large and ever-expanding empirical law and finance literature. *See, e.g.*, Lucian Bebchuk & Mark Roe, *A Theory of Path Dependence in Corporate Governance and Ownership*, 52 STAN. L. REV. 127 (1999); John Coffee, *The Future as History: The Prospects for Global Convergence in Corporate Governance and its Implications*, 93 NW. U. L. REV. 641 (1999) [hereinafter *Prospects for Global Convergence*]; John C. Coffee, *The Rise of Dispersed Ownership: The Roles of Law and the State in the Separation of Ownership and Control*, 111 YALE L.J. 3 (2001) [hereinafter *Rise of Dispersed Ownership*]; Simeon Djankov, Rafael La Porta, Florencio Lopez-de-Silanes & Andrei Shleifer, The Law and Economics of Self-Dealing (2006) [hereinafter Djankov et al., *Self-Dealing*] (unpublished manuscript, on file with author); Rafael La Porta, Florencio Lopez-de-Silanes, Andrei Shleifer & Robert Vishny, *Law and Finance*, 106 J. POL. ECON. 1113 (1998) [hereinafter La Porta et al., *Law and Finance*]; Rafael La Porta, Florencio Lopes-de-Silanes, Andrei Shleifer & Robert Vishny, *Legal Determinants of External Finance*, 52 J. FIN. 1131 (1997) [hereinafter La Porta et al., *Legal Determinants*]; Rafael La Porta, Florencio Lopez-de-Silanes & Andrei Shleifer, *What Works in Securities Laws?*, 61 J. FIN. 1 (2006) [hereinafter La Porta et al., *What Works?*].

9. *See* discussion *infra* Part V.

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detrimental, as Professor Manne and others have posited, the pattern I find would have been unlikely.

The Article is organized as follows: Part II reviews the theoretical law and economics debate about the desirability of regulating insider trading, categorizing the theories of insider trading into two broad groups, agency theories and market theories; Part III formulates three testable hypotheses that emerge from the theoretical literature; Part IV describes the data and presents summary statistics; Part V presents and discusses the results of multivariable regression analysis; and finally, Part VI concludes by addressing some of the implications of this Article's findings for the theoretical law and economics debate about insider trading. In particular, I argue that this Article's findings tend to support the arguments of legal scholars who argue that insider trading regulation has a beneficial impact on stock markets. However, more empirical work is necessary to conclusively resolve the theoretical debate.

II. THE LAW AND ECONOMICS DEBATE OVER INSIDER TRADING

Law and economics theories about insider trading fall into two main categories: agency theories and market theories of insider trading.[10] Agency theories of insider trading analyze its effect on the classic corporate agency problem, the manager-shareholder conflict of interest.[11] These theories consider whether insider trading ameliorates or worsens this conflict, and therefore whether it increases or reduces firm-level efficiency.[12] In contrast, market theories of insider trading address its broader ramifications for market efficiency.[13] In this Part, I summarize common agency and market theories for and against insider trading regulation, and I briefly discuss the private contracting approach that some opponents of insider trading regulation advocate.

A. Agency Theories of Insider Trading

Agency theories of insider trading analyze the effects of insider trading on agency costs.[14] If insider trading reduces the divergence between shareholders' and managers'

10. Proponents and opponents of insider trading regulation often defend their arguments on both agency and market efficiency grounds. However, this categorization of the arguments is a useful organizing tool.

11. *See* ADOLF A. BERLE & GARDINER C. MEANS, THE MODERN CORPORATION AND PRIVATE PROPERTY (2005) (exploring effect of manager-shareholder conflict of interest on corporations); Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure*, 3 J. FIN. ECON. 305 (1976) (explaining the conflict that exists when managers have mixed financial interests in corporations).

12. Judge Easterbrook was one of the first scholars systematically to explore the agency dimensions of insider trading. Frank H. Easterbrook, *Insider Trading as an Agency Problem*, *in* PRINCIPALS AND AGENTS: THE STRUCTURE OF BUSINESS 81 (John W. Pratt & Richard J. Zeckhauser eds., 1985).

13. These market features are often referred to collectively as market integrity. *See generally* Lawrence M. Ausubel, *Insider Trading in a Rational Expectations Economy*, 80 AM. ECON. REV. 1022 (1990) (modeling the effect of insider trading on "investor confidence"); Utpal Bhattacharya, Hazem Daouk, Brian Jorgenson & Carl-Heinrich Kehr, *When an Event is Not an Event: The Curious Case of an Emerging Market*, 55 J. FIN. ECON. 69, 72 n. 4 (2000) ("Market integrity refers to the disadvantages [that] outsiders face vis-à-vis insiders when trading in the market.").

14. Jensen and Meckling define agency costs as the sum of the shareholders' monitoring costs, the managers' bonding costs, if any, and the residual loss, which is the decrease in shareholders' welfare caused by

interests, then it reduces agency costs. Conversely, if insider trading increases this divergence, then it increases agency costs. Proponents of unregulated insider trading argue the former is true, while proponents of insider trading regulation opt for the latter.

1. Insider Trading as an Efficient Compensation Mechanism

In *Insider Trading and the Stock Market*, Professor Manne argues that insider trading is economically efficient because it motivates entrepreneurial innovation.[15] According to Professor Manne, it is difficult to compensate entrepreneurs because, unlike capitalists and salaried employees, it is hard to identify entrepreneurs in advance. Because anyone from regular salaried employees to top executives may generate profitable innovations, it is difficult to set entrepreneurs' pay in advance. Moreover, the value of entrepreneurial activity will be vague at the outset:

> True innovation cannot be predicted nor its value known before it has been thought of and made effective. True innovation cannot be planned and budgeted in advance. An individual cannot be hired to perform *x* amount of entrepreneurial service.[16]

Finally, so the argument goes, the dynamic nature of innovation renders it virtually impossible to contract over in advance. [17]

Insider trading is seen as a mechanism to avoid the inefficiencies that these conditions would otherwise produce. Through insider trading, entrepreneurs can be rewarded in direct proportion to and contemporaneously with their innovations.[18] Entrepreneurial innovation creates valuable new information (at the most basic level, that there has been an innovation), and the first person to know about it is the entrepreneur who produced the innovation. She can profit by buying the company's shares before the public learns of the innovation and before their value rises to reflect the positive news. Even if the entrepreneur is wealth-constrained and thus cannot buy unlimited shares, she can "sell" this information to others.[19] In this manner, insider trading "readily allows corporate entrepreneurs to market their innovations," thus forging a closer link between entrepreneurial compensation and innovation.[20] Since it maximizes their incentives to innovate, insider trading is the best way to compensate entrepreneurs, according to Professor Manne.[21]

Professors Carlton and Fischel recast Professor Manne's efficient compensation thesis in the language of the economics of agency.[22] They argue that insider trading is efficient because it reduces agency costs. In their view, relying on capital and product markets to properly incentivize managers is insufficient because these markets work imperfectly, making it relatively difficult to remove poorly performing managers. Ex ante compensation contracts are inadequate because they would require costly "periodic renegotiations ex post based on (imperfectly) observed effort and output . . . ."[23] In contrast, insider trading enables managers continually to update their compensation in light of new information without incurring renegotiation costs.[24] Insider trading thus increases mangers' incentives by linking their "fortunes more closely to those of the firm."[25]

In addition, Professors Carlton and Fischel claim, insider trading improves the managerial labor market:

> A related advantage of insider trading is that it provides firms with valuable information concerning prospective managers. It is difficult for firms to identify those prospective managers who will work hard and not be overly risk averse in their choice of investment projects. Basing compensation in part on insider trading is one method for sorting superior from inferior managers. Because insider trading rewards those managers who create valuable information and are willing to take risks, managers who most prefer such compensation schemes may be those who are the least risk averse and the most capable.[26]

Because the ability to engage in insider trading causes the most able managers to self-select into firms that allow it, insider trading reduces both screening and monitoring costs.[27] Lower screening and monitoring costs imply lower agency costs, a central concern of corporate law.

2. Insider Trading as an Agency Cost

Proponents of insider trading regulation emphasize its rent-extraction potential, suggesting that insider trading might simply be an inefficient private benefit of control that accrues to managers and other insiders at shareholders' expense.[28] They argue that rather than serving as an incentive-alignment device that more closely aligns shareholders' and managers' interests, insider trading can exacerbate agency costs by distorting the managerial wage-setting process.[29] If they are permitted to trade, managers might be able, ex post, to undo an efficient ex ante compensation contract and thereby sabotage performance-based compensation schemes intended to calibrate pay to

the divergence between the managers' decisions and the decisions that would maximize the shareholders' wealth. Jensen & Meckling, *supra* note 11, at 308. Judge Easterbrook was one of the first scholars systematically to explore the agency dimensions of insider trading. *See* Easterbrook, *supra* note 12.

15. MANNE, *supra* note 3.
16. *Id.* at 133.
17. *Id.* at 132-38.
18. *Id.* at 138-41.
19. *Id.* at 138-39.
20. MANNE, *supra* note 3, at 138.
21. *Id.*
22. Carlton & Fischel, *supra* note 6, at 866.
23. *Id.* at 870.
24. *Id.* at 866.
25. *Id.* at 877.
26. *Id.* at 871-872.
27. Carlton & Fischel, *supra* note 6, at 866.
28. On the problem of private benefits of control, see generally, Sanford J. Grossman and Oliver D. Hart, *Coporate Financial Structure and Managerial Incentives*, *in* THE ECONOMICS OF INFORMATION AND UNCERTAINTY 125 (J. J. McCall ed., 1982).
29. Reinier Kraakman, *The Legal Theory of Insider Trading Regulation in the United States*, *in* EUROPEAN INSIDER DEALING: LAW AND PRACTICE 47, 52 (Klaus J. Hopt & Eddy Wymeersch eds., 1991); Klock, *supra* note 5, at 313-15.

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productivity.[30] As a result, firms might have to monitor managers' trading ex post, offsetting its presumed cost-saving to the firm.[31]

In addition, some proponents of regulation argue that in practice it is difficult to ensure that those who produce valuable information (i.e., entrepreneurial innovations) are the only ones who are able to profit from it.[32] This non-excludability feature of insider trading benefits could generate a free-rider problem and possibly lead to information hoarding within the firm as the true entrepreneurs, who are the real innovators in the firm, would have an incentive to hold their information close to their chests to maintain a monopoly on insider trading profits. The inability of the firm's true entrepreneurs to monopolize the information about their innovations vis-à-vis other insiders might ultimately reduce the incentive to innovate and therefore negatively affect corporate performance. In addition, by obstructing the free flow of information through the firm, such information hoarding could reduce the firm's overall organizational efficiency.[33]

Proponents of insider trading legislation also claim "that allowing managers to trade on inside information" might give them incentives to take on too much risk or to undertake value-reducing projects.[34] Since insider trading is more profitable the more stock price volatility increases, it might encourage managers to engage in excessively risky investment behavior by undertaking overly risky projects that create private opportunities for profitable insider trading but that reduce corporate value for the firm.[35] In addition, since managers can profit from insider trading whether the firm is performing

30. Kraakman, *supra* note 29, at 52.

31. Even Professors Carlton and Fischel, ardent proponents of deregulation, concede that "[b]anning insider trading would prevent insiders from undoing compensation agreements in this manner." Carlton & Fischel, *supra* note 6, at 873.

32. *See, e.g.*, James D. Cox, *Insider Trading and Contracting: A Critical Response to the Chicago School*, 1986 DUKE L.J. 628, 653 (1986) (stating that "most [U.S.] insider-trading cases have not involved those whose entrepreneurial or other managerial efforts have produced the value-increasing event that was traded upon. Instead, the defendants have been outside directors, professionals, or clerks whose assistance was used to complete the transaction, not to create it").

33. Robert J. Haft, *The Effect of Insider Trading Rules on the Internal Efficiency of the Large Corporation*, 80 MICH. L. REV. 1051, 1053-67 (1982). This argument is, in my view, an example of the shortcomings of the abstract theorizing that has characterized both sides of the insider trading debate. If an innovator held her information completely private, neither she nor her firm would benefit because the innovation would never be developed. If she were to buy stock in the company before disclosing her idea, her investment would have to account for the likelihood that she could not sell her innovation within the firm, and she might be poorly situated to estimate this risk. Realistically, the type of insider trading that regulators have been concerned with often does not involve innovation at all but knowledge that a person secures because of her position in the firm, such as knowledge about what the next quarterly report will say. To the extent that innovation is involved, trading on the inside knowledge is likely to be sufficiently downstream from the original innovative or entrepreneurial spark so that many who did not contribute to its development will be able to benefit from it if they are allowed to trade on their inside knowledge.

34. *See* Klock, *supra* note 5, at 313-15; Kraakman, *supra* note 29, at 52 (discussing the role of managers in insider trading); *see also* Lucian Arye Bebchuk & Chaim Fershtman, *Insider Trading and the Managerial Choice Among Risky Projects*, 29 J. FIN. & QUANT. ANALYSIS 1 (1994) (presenting a formal economic model of the effect of insider trading on managers' choice among risky investments).

35. *See* Kraakman, *supra* note 29, at 52 ("The option-like character of returns from insider trading rewards the selection of projects with volatile payouts, regardless of whether they have a positive or negative return on net."). In response, opponents of insider trading regulation claim that managers are too risk averse and insider trading encourages them to bear more risk, which is good for shareholders.

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poorly or well, insider trading increases managers' incentives to under-perform by making them indifferent as to whether the firm is doing well or poorly.[36]

If corporate insiders are permitted to sell the firm's shares short, the potential problems of excessive risk-taking and compensation unbundling induced by insider trading may be exacerbated.[37] Professor Klock gives a colorful and somewhat humorous example:

> A case in point is that of Mr. Albert Wiggin, as told by Professor Malkiel. Mr Wiggin was,
>
> [t]he head of Chase, the nation's second largest bank at the time. In July 1929 Mr. Wiggin became apprehensive about the dizzy heights to which stocks had climbed and no longer felt comfortable speculating on the bull side of the market. . . . Believing that the prospects of his own bank's stock were particularly dim . . . he sold short over 42,000 shares of Chase stock. . . .
>
> Wiggin's timing was perfect. Immediately after the short sale the price of Chase stock began to fall, and when the crash came in the fall the stock dropped precipitously. When the account was closed in November, Mr. Wiggin had netted a multimillion dollar profit from the operation. . . .
>
> There are two possible interpretations of the Wiggin case. One is that Mr. Wiggin believed bad news was inevitable and sold short. He then worked vigorously against his own self interest trying to minimize his profit, and even trying to lose his personal wealth, but nevertheless managed to make a great deal of money in spite of his best efforts to the contrary. . . . The alternative was that there is some self-dealing going on. Readers are left to determine for themselves the more probable explanation.[38]

B. Market Theories of Insider Trading

Insider trading might have efficiency implications that are broader than its effects at the firm level.[39] Market theories of insider trading address these broader ramifications. The two measures that are most frequently addressed in the insider trading debate are stock price accuracy and stock market liquidity. Economists and finance scholars have

36. Kraakman, *supra* note 29, at 52 (discussing the role of managers in insider trading); Klock, *supra* note 5, at 313-15; Easterbrook, *supra* note 12, at 86; Iman Anabtawi, Note, *Toward A Definition of Insider Trading*, 41 STAN. L. REV. 377, 391-92 (1989).

37. In the U.S., Rule 16(b) prohibits short-selling. U.S. Securities Exchange Act of 1934, 15 U.S.C. § 78p(b) (2006). *But see* Carlton & Fischel, *supra* note 6, at 873-74 (arguing that short selling may be beneficial to the firm, "if it induces managers to invest in a way that maximizes the value of the firm" and that managers will be sufficiently self-constrained not to seek profits from bad news).

38. Klock, *supra* note 5, at 314-15 (quoting BURTON G. MALKIEL, A RANDOM WALK DOWN WALL STREET 186 (1990)) (internal quotations omitted).

39. *See generally* Zohar Goshen & Giedeon Parchomovsky, *On Insider Trading, Markets, and "Negative" Property Rights in Information*, 87 VA. L. REV. 1229 (2001) (discussing the effects of insider trading on market efficiency); Kimberly D. Krawiec, *Fairness, Efficiency, and Insider Trading: Deconstructing the Coin of the Realm in the Information Age*, 95 NW. U. L. REV. 443 (2001) (addressing the efficiency implications of insider trading for the market for information).

long noted the importance of both of these characteristics of the stock market to the efficiency of capital allocation and the cost of capital and therefore ultimately to economic growth.[40]

1. Insider Trading and Stock Price Accuracy

a. The Meaning and Economic Significance of Stock Price Accuracy

There is disagreement about the meaning of accurate stock prices.[41] In this Article, I refer to accurate stock prices as stock prices that reflect as much firm-specific information as possible. As Professors Fox, Morck, Yeung, and Durnev point out, "[s]hare price is relatively 'accurate' if it is likely to be relatively close, whether above or below, to the share's actual value. When a price has a high expected accuracy, the deviation of the price from actual value is, on average, relatively small."[42]

Accurate share prices are important to economic efficiency via their effect on capital allocation:

> More accurate prices can increase the amount of value added by firms as they use society's scarce resources for the production of goods and services. In a competitive economy, the increase in value added will generally increase both the level of firm cash flows . . . and returns to other factors of production . . . by improving the quality of [capital allocation across] investment projects in the economy and by improving the operation of existing real assets.[43]

In addition to improving the efficiency of capital allocation, accurate stock prices might reduce agency costs within the firm:

> [A]dditional disclosure and increased share price accuracy, by signaling when there are problems, assist in both the effective exercise of the shareholder franchise and shareholder enforcement of management's fiduciary duties. Additional disclosure and more accurate share prices also increase the threat of hostile takeover when managers engage in non-share-value-maximizing behavior.[44]

"Share price accuracy is a function of two core determinants. One is the amount of information concerning a firm's future distributions that exists in the hands of one or more persons in the world. The other is the extent to which price reflects this information."[45] Insider trading potentially impacts both of these determinants of share price accuracy.

b. The Law and Economics Debate about Insider Trading and Stock Price Accuracy

Firms may directly affect the accuracy of their share prices by regularly disclosing information. However, although corporate disclosure is beneficial, it is also costly.[46] Disclosure is a public good in that firms bear most of the (private) costs of disclosure, but do not reap its full benefits, which are dispersed among the firm and the public, which includes rival firms and investors.[47] In some cases, disclosure might even be detrimental to the firm's own investors by revealing too much too soon. Thus, firms might engage in less than the socially optimal amount of disclosure.[48]

In *Insider Trading and the Stock Market*, Professor Manne argues that insider trading enables a firm to improve the accuracy of its stock's price relative to its true value without incurring the costs associated with premature disclosure of firm-specific information.[49] Similarly, Professors Carlton and Fischel argue that insider trading is less costly than traditional disclosure:[50]

> Through insider trading, a firm can convey information it could not feasibly announce publicly because an announcement would destroy the value of the

40. On the positive role of share price accuracy, see for example, Merritt B. Fox, Randall Morck, Bernard Yeung & Artyom Durnev, *Law, Share Price Accuracy, and Economic Performance: The New Evidence*, 102 MICH. L. REV. 331, 345-46 (2003); Li Jin & Stewart C. Myers, *R^2 Around the World: New Theory and New Tests*, 79 J. FIN. ECON. 257 (2006); Jeffrey Wurgler, *Financial Markets and the Allocation of Capital*, 58 J. FIN. ECON. 187 (2000). On the positive role of stock market liquidity, see for example, Yakov Amihud & Haim Mendelson, *Asset Pricing and the Bid-Ask Spread*, 17 J. FIN. ECON. 223 (1986); Michael J. Barclay & Clifford W. Smith, Jr., *Corporate Payout Policy: Cash Dividends versus Open Market Repurchases*, 22 J. FIN. ECON. 61 (1988); Michael J. Brennan & Avanidhar Subrahmanyam, *Market Microstructure and Assets Pricing: On the Compensation for Illiquidity in Stock Returns*, 41 J. FIN. ECON. 441 (1996); Gady Jacoby, David J. Fowler & Aron A. Gottesman, *The Capital Asset Pricing Model and the Liquidity Effect: A Theoretical Approach*, 3 J. FIN. MARKETS 69 (2000).

41. *See* John M. R. Chalmers & Gregory B. Kadlec, *An Empirical Examination of the Amortized Spread*, 48 J. FIN. ECON. 159 (1998); Vinay T. Datar, Narayan Y. Naik & Robert Radcliffe, *Liquidity and Stock Returns: An Alternative Test*, 1 J. FIN. MARKETS 203 (1998); Klock, *supra* note 5, at 299.

42. Fox et al., *supra* note 40, at 345-46 and corresponding notes.

43. *Id.* at 338-39 and corresponding notes. For empirical evidence that the efficiency of capital allocation in the economy is positively correlated with more accurate stock prices (i.e., stock prices that reflect more firm-specific information), see Wurgler, *supra* note 40.

44. Fox et al., *supra* note 40, at 340 and corresponding notes.

45. *Id.* at 346 and corresponding notes.

46. *See* George J. Benston, *The Value of the SEC's Accounting Disclosure Requirements*, 44 ACCT. REV. 515 (1969). For a comparative empirical study of the determinants of voluntary corporate disclosure, see Gary K. Meek, Clare B. Roberts & Sidney J. Gray, *Factors Influencing Voluntary Annual Disclosures by U.S., U.K. and Continental European Multinational Corporations*, 26 J. INT'L BUS. STUD. 555 (1995).

47. A *public good* is a good that is impossible to exclude parties from consuming and that one person's consumption of does not decrease the amount that other consumers may consume of such good. HAL R. VARIAN, MICROECONOMIC ANALYSIS 414 (1992). In general, the government or other public institutions (like voting) rather than private markets are the most efficient providers of public goods. *Id.* at 415, 417-28. Consequently, if stock price accuracy and stock market liquidity are public goods, private contracting might not yield the optimal amount and regulation might be the best way to attain the optimal amount of these "goods."

48. *See generally* Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, *in* THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS, NATIONAL BUREAU OF ECONOMIC RESEARCH CONFERENCE SERIES (1962); John C. Coffee, Jr., *Market Failure and the Economic Case for a Mandatory Disclosure System*, 70 VA. L. REV. 717 (1984); Merritt B. Fox, *Retaining Mandatory Securities Disclosure: Why Issuer Choice is Not Investor Empowerment*, 85 VA. L. REV. 1335 (1999). The socially optimal amount of disclosure lies somewhere between no disclosure and complete disclosure. Left to their own devices, firms would probably disclose less than the socially optimal amount, which presumably explains why the law compels disclosure through mandatory disclosure rules. Mandatory disclosure supplements firms' voluntary disclosure of information that is relevant to the value of their shares.

49. MANNE, *supra* note 3, at 80-91; Henry G. Manne, *Insider Trading: Hayek, Virtual Markets, and the Dog that Did Not Bark*, 31 J. CORP. L. 167, 169 & n.10 (2005).

50. Carlton & Fischel, *supra* note 6, at 868.

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> information, would be too expensive, not believable, or—owing to the uncertainty of the information—would subject the firm to massive damage liability if it turned out ex post to be incorrect.[51]

When insiders trade on the basis of private information (e.g., a new discovery, an impending merger, etc.) prices will adjust to reflect the news, but without prematurely revealing the underlying information to the market.[52] Professor Manne argues that this mechanism of price adjustment is more efficient than prohibiting insiders from trading and therefore delaying the incorporation of information (that the firm is unwilling or unable immediately to disclose) into the stock's price.[53]

In contrast, advocates of insider trading regulation question its utility as a cheap substitute for traditional disclosure methods on several grounds. First, they argue that insider trading is likely to distort managers' incentives to disclose information in a timely manner.[54] Insiders' ability to profit from insider trading depends fundamentally on their superior access to information. The more that they can control the leakage of information, the more they stand to gain from insider trading. This might include hoarding information to the detriment of both price accuracy[55] and the firm's operational efficiency.[56] In the worst case, insider trading might reduce stock price accuracy by increasing corporate insiders' incentives to manipulate information disclosure to maximize their trading profits.[57]

Second, it might be difficult for outsiders to detect insiders' trades. One reason is insiders might deliberately hide their trading to "preserve their informational monopolies, even if their activities were legal."[58]

> It will be very costly to detect an insider's trades, because he can hide his trading activity. He can buy stock in street names or through nominees (including trusts and family members); he may route orders through a chain of brokers to make tracing difficult; the list of evasive devices is long. [59]

If insiders are able to hide their trades, insider trading will be difficult to discern. Even if insiders do not deliberately hide their trades, they might avoid taking large positions due to risk aversion. If insiders' trades are insufficiently large, they will be undetectable and thus might fail to convey new information.[60] In addition, the more "noise" there is

51. *Id.*
52. *Id.* at 879.
53. MANNE, *supra* note 3, at 86-90, Figures 3 and 4 and accompanying text.
54. Kraakman, *supra* note 29, at 52.
55. *Id.* at 51.
56. *See* Haft, *supra* note 33, at 1054-57.
57. *See* Kraakman, *supra* note 29, at 51; Cox, *supra* note 32, at 648; *see also* Roland Benabou & Guy Laroque, *Using Privileged Information to Manipulate Markets: Insiders, Gurus, and Credibility*, 107 Q.J. ECON. 921 (1992) (presenting an economic model demonstrating the effect of private information on insiders' incentives to manipulate the market with deliberately misleading announcements).
58. Kraakman, *supra* note 29, at 50.
59. Easterbrook, *supra* note 12, at 91; *see also* Ronald J. Gilson & Reinier H. Kraakman, *The Mechanisms of Market Efficiency*, 70 VA. L. REV. 549, 631-32 (1984) (noting that the extent to which insider trading makes stock prices more efficient depends on the extent to which uniformed investors are able to discern insider trading).
60. *See generally* Gilson & Kraakman, *supra* note 59, at 574-79 (describing how uninformed investors might infer the nature of inside information by observing trading volume or price movements due to insider trading, particularly if they are able to infer the identity of the inside traders).

surrounding an inside trade, the lower its informational value.[61]

Finally, proponents of insider trading regulation argue that even if insiders do not hide their trades or delay disclosure to monopolize insider trading profits, whatever advantage insider trading might have over traditional disclosure is probably very small. The argument for insider trading as an alternative means of disclosure is strongest when the information in question is the kind of information managers have little ability or incentive to disclose.[62] "Familiar examples include complex or 'soft' information that cannot be communicated effectively, bad news that might embarrass incumbent managers, and good news that cannot be released directly without aiding an issuer's competitors or upsetting ongoing negotiations."[63]
In the case of these kinds of information, allowing insider trading might do more to update prices than public announcement, as Professors Manne, Carlton and Fischel argue. However, for most types of information, traditional disclosure seems relatively cheap.[64]

2. Insider Trading and Stock Market Liquidity

a. The Meaning and Economic Significance of Stock Market Liquidity

As finance scholar David Lesmond notes, "[l]iquidity, by its very nature, is difficult to define and even more difficult to estimate."[65] Similarly, finance scholar Albert Kyle writes, "liquidity is a slippery and elusive concept."[66] However, the general view in the finance literature seems to be that stock market liquidity refers to the transaction costs of trading—direct or indirect.[67] A liquid stock market has relatively low trading costs, while an illiquid stock market has relatively high trading costs. Like accurate stock prices, a liquid stock market is important to efficient capital allocation in the economy. In addition, theoretical and empirical research suggests that lower liquidity costs (more liquid stock markets) are associated with a lower cost of capital and higher market valuation.[68] An important issue in the law and economics debate about insider trading is whether it has a detrimental effect on stock market liquidity.

61. Carlton & Fischel, *supra* note 6, at 868; Kraakman, *supra* note 29, at 50.
62. Kraakman, *supra* note 29, at 50.
63. *Id.* at 50.
64. *See* Michael Manove, *The Harm from Insider Trading and Informed Speculation*, 104 Q. J. ECON. 823, 826-27 (1989).
65. David A. Lesmond, *Liquidity of Emerging Markets*, 77 J. FIN. ECON. 411, 412 (2005).
66. *Id.* (quoting Albert Kyle, *Continuous Actions and Insider Trading*, 53 ECONOMETRICA 1315, 1316 (1985)).
67. *Id.*
68. For theoretical proof of the positive relationship between liquidity costs and the firm's cost of capital, see Amihud & Mendelson, *supra* note 40; Barclay & Smith, *supra* note 40; Jacoby et al., *supra* note 40. *But see* Amar Bhide, *The Hidden Costs of Stock Market Liquidity*, 34 J. FIN. ECON. 31 (1993) (arguing that excessive liquidity could harm corporate performance by reducing dominant shareholders' incentive to monitor managers). For empirical evidence that greater liquidity is associated with a lower cost of capital, see Brennan & Subrahmanyam, *supra* note 40; John M.R. Chalmers & Gregory B. Kadlec, *An Empirical Examination of the Amortized Spread*, 48 J. FIN. ECON. 159 (1998); Datar et al., *supra* note 41.

b. The Law and Economics Debate about Insider Trading and Stock Market Liquidity

Insider trading is profitable because of the asymmetry of information between insiders and outsiders. On average, when an insider sells her firm's stock, she sells for more than the stock's "true" worth and when she buys her firm's stock, she buys at less than its "true" value.[69] The difference between the insider's purchase or sell price and the "true" value is the premium she receives because of having superior information relative to outsiders. This premium represents a trading cost to less informed counter-parties.[70] Thus, controlling for other factors, a market characterized by pervasive insider trading might be less liquid than a market in which insider trading is less severe.[71] If information asymmetry is extreme, uninformed investors may refrain from trading altogether, rendering the stock market fully illiquid.[72]

Opponents of insider trading regulation dismiss its potential adverse effect on liquidity. In particular, the fact that uninformed investors trade frequently implies that they are not hindered by the existence of more informed parties, whether or not the latter are insiders.[73] That uniformed investors trade in spite of asymmetric information might suggest that their trading decisions are independent of trading costs.[74] Indeed, some opponents of insider trading regulation argue uninformed investors might trade precisely because of informed trading, which increases the accuracy of stock prices: "That trade occurs suggests that traders either do not believe they are uninformed or realize that enough informed trading occurs for the prevailing prices to reflect most material information."[75] In other words, the benefits of improved price accuracy might offset the potential costs of trading against better-informed counter-parties.

Opponents of insider trading regulation argue further that some investors will always be more informed than others. "Smart brokers . . . cause the same problems as smart insiders. Uninformed traders who know they are uninformed should not trade in

69. *See* Manove, *supra* note 64, at 823-24.

70. *See* Nicholas L. Georgakopoulos, *Insider Trading as a Transactional Cost: A Market Microstructure Justification and Optimization of Insider Trading Regulation*, 26 CONN. L. REV. 1, 17 (1993) ("Informed traders 'take' part of the stock market returns from the uninformed traders . . . . This 'taking' thus resembles a transaction cost since it can be avoided by not trading."); Goshen & Parchomovsky, *supra* note 39, at 1251-53, 1260-62 and corresponding notes; Kraakman, *supra* note 29, at 48 ("[I]nsider trading functions as a trading tax on outsiders.").

71. *Id.* Even Professors Carlton and Fischel, staunch opponents of banning insider trading, acknowledge that "insider trading could be detrimental to the extent it reduces liquidity." Carlton & Fischel, *supra* note 6, at 879.

72. Professor Akerlof established the theoretical connection between information asymmetry and market failure, showing that markets malfunction when there is asymmetric information and may break down entirely in cases of extreme information asymmetry. George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488 (1970). For evidence that insider trading laws and enforcement are associated with more liquid stock markets, see Utpal Bhattacharya & Hazem Daouk, *The World Price of Insider Trading*, 57 J. FIN. 75, 90-93 (2002) (concluding "that the enforcement of insider trading laws affects the cost of equity through its positive effect on liquidity").

73. Carlton & Fischel, *supra* note 6, at 879-80.

74. *See id.*; *see also* David D. Haddock & Jonathan R. Macey, *A Coasian Model of Insider Trading*, 80 NW. U. L. REV. 1449, 1457 (1987) (observing that uninformed investors "will follow a 'buy and hold' strategy [and] [b]ecause they trade securities infrequently, they will be relatively insensitive to the bid-ask spread charged by market makers").

75. Carlton & Fischel, *supra* note 6, at 880.

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either situation."[76] Insider trading laws cannot eliminate this phenomenon. Rather, prohibiting insider trading simply redistributes (but does not reduce) the profits from informed trading from insiders to market professionals and other informed traders.[77] As a result, banning insider trading will not reduce the cost of trading, opponents of insider trading regulation argue.[78]

However, some proponents of insider trading regulation argue that prohibiting insider trading will reduce the cost of trading by increasing competition among informed traders. There are essentially two competing groups of informed traders, corporate insiders and informed outsiders (e.g., investment analysts, hedge fund and mutual fund managers, etc.). Insiders have a clear advantage over informed outsiders, since the latter generally are not privy to non-public corporate information, while insiders are always privy to such information. If insiders are allowed freely to trade on non-public corporate information (i.e., if insider trading is legal), they have a virtual monopoly on the profits from informed trading.[79] This discourages informed outsiders from investing in information gathering and analysis and there are thus fewer informed outsiders in the market. Conversely, if insider trading is banned, more informed outsiders will participate in the market. In turn, because there are more of them, none with monopoly access to corporate information, the information market will be more competitive. A more competitive market for information implies lower total profits from informed trading, relative to a world in which insider trading is legal and insiders have monopolistic access to information. Greater competition in the information market presumably translates into lower trading costs[80] and more accurate stock prices.[81]

Critics of insider trading regulation respond that if insider trading were harmful to liquidity, firms would voluntarily prohibit it because greater liquidity is valuable.[82] Therefore, they argue, the fact that firms do not voluntarily proscribe insider trading suggests that it does not harm liquidity. Yet, there is evidence that, at least in the United States, firms *do* proscribe insider trading (albeit in the shadow of the law) and that this

76. *Id.* at 879-80.

77. David D. Haddock & Jonathan R. Macey, *Controlling Insider Trading in Europe and America: The Economics of the Politics*, *in* LAW AND ECONOMICS AND THE ECONOMICS OF LEGAL REGULATION 149 (J. Matthias Graf von der Schulenburg & Goran Skogh eds., 1986) [hereinafter Haddock & Macey, CONTROLLING INSIDER TRADING]; David D. Haddock & Jonathan R. Macey, *Regulation on Demand: A Private Interest Model, with an Application to Insider Trading Regulation*, 30 J.L. & ECON. 311 (1987) [hereinafter Haddock & Macey, *Regulation on Demand*]. Consistent with this, a recent empirical study finds that analyst following increases after countries' initial enforcement of insider trading laws. Robert M. Bushman et al., *Insider Trading Restrictions and Analysts' Incentives to Follow Firms*, 60 J. FIN. 35 (2005).

78. Haddock & Macey, CONTROLLING INSIDER TRADING, *supra* note 77, at 153. However, uninformed investors may not know they are uninformed and/or while they may be willing to pay a moderate premium (brokerage fee) reflecting their information disadvantage relative to more informed traders, they might be unwilling to pay the very high fees that might result if they are trading against corporate insiders.

79. *See* Georgakopoulos, *supra* note 70, at 20-30.

80. *See id.* at 17.

81. *See* discussion *infra* Parts III.A and III.B.

82. Haddock & Macey, CONTROLLING INSIDER TRADING, *supra* note 77. For empirical evidence that greater liquidity is associated with a lower cost of capital for the firm, see Brennan & Subrahmanyam, *supra* note 40; Chalmers & Kadlec, *supra* note 68; Vinay T. Datar et al., *Liquidity and Stock Returns An Alternative Test*, 1 J. FIN. MARKETS 204 (1998).

results in lower bid-ask spreads (i.e., greater liquidity).[83]

Supporters of insider trading regulation argue that the reason firms and their shareholders do not pre-commit to ban insider trading is that greater liquidity is a public good, which firms systematically under-provide:

> [E]ven if firms know the true correlation of price and transaction costs, they may still reduce transaction costs less than is socially desirable if there is a benefit to society from low transaction costs and market liquidity which firms do not enjoy (in essence, transaction costs are [a positive] externality).[84]

Because firms have insufficient incentives to provide liquidity by banning insider trading themselves, markets must rely on government regulation, proponents of regulation argue.[85] The question of whether firms and shareholders would voluntarily prohibit insider trading if it were harmful is another controversial theme in the law and economics debate, to which this Article now turns briefly.

c. A "Coasian" Approach to Insider Trading: Private Contracting

In addition to the question whether insider trading is harmful or beneficial and to whom, another aspect of the law and economics debate about insider trading is the issue of who should regulate insider trading—the government or private parties? Professors Carlton and Fischel advocate private negotiations between firms and insiders. They argue that the question is essentially one about the optimal allocation of the property right in corporate information, a decision they believe is most efficiently made by private parties:

> Whether insider trading is beneficial depends on whether the property right in information is more valuable to the firm's managers or to the firm's investors. In either case, the parties can engage in a value-maximizing exchange by allocating the property right in information to its highest-valuing user. If the critics of insider trading are correct, therefore, both the firm's investors and the firm's insiders could profit by banning insider trading, thereby allocating the property right in information to the firm's investors.[86]

Two observations about the contractual approach are worth mentioning. First, law and economics scholars who advocate private contracts over insider trading regulation confine their investigation of the optimal allocation of the property right in corporate information to within the boundaries of the firm.[87] The property right is assignable by

83. Many U.S. firms have voluntary insider trading policies that go beyond the requirements of insider trading regulations. In particular, many U.S. firms specify "black-out" periods, often prior to earnings announcements, during which insiders are forbidden to trade absent corporate approval. *See* J.C. Bettis et al., *Corporate Policies Restricting Trading by Insiders*, 57 J. FIN. ECON. 191 (2000). It appears that these policies result in reduced bid-ask spreads (i.e., greater liquidity) during the "black-out" periods. *Id.* at 211-14.

84. Georgakopoulos, *supra* note 70, at 34 n.69 and corresponding text.

85. *Id.* at 17; *see also* Goshen & Parchomovsky, *supra* note 39, at 1261-62 (explaining why private firms and shareholders will not privately provide sufficient liquidity to the stock market). *But see* Bettis et al., *supra* note 83 (demonstrating that many U.S. firms *do* voluntarily restrict insider trading, albeit in the shadow of the law).

86. Carlton & Fischel, *supra* note 6, at 863.

87. *See, e.g.*, JONATHAN R. MACEY, INSIDER TRADING: ECONOMICS, POLITICS, AND POLICY 4 (1991) (observing that "the debate about insider trading is really a debate about how to allocate a property right *within* the firm"); Carlton & Fischel, *supra* note 6 (investigating whether shareholders or insiders should have the property right to valuable corporate information); Haddock & Macey, *supra* note 74 (investigating whether shareholders or insiders should have the property right to valuable corporate information). For a critique of this narrow focus, see Goshen & Parchomovsky, *supra* note 39, at 1233 (arguing "that existing analysis is misguided as it rests on the erroneous assumption that property rights to inside information must be allocated within the boundaries of the firm—namely, either to shareholders or to managers" and, for that reason, overlooks "the possibility of awarding the property right of inside information" to third parties outside the firm, like market analysts).

contract either to the firm (shareholders) or to insiders, by this approach, which is based on the notion of the firm as a nexus of contracts.[88] Second, the contractual argument rests on the applicability of the Coase theorem, which states that, in the absence of transaction costs, uncertainty, and externalities, private parties will allocate property rights (resources) to their most efficient uses.[89] Applying the Coase theorem to insider trading, some law and economics scholars contend that if there were no government regulation, firms and shareholders would privately negotiate the optimal allocation of the property right in corporate information.[90] For some firms this would imply permitting insiders to trade on private information, while for other firms, it would imply prohibiting insiders to trade on private information.[91] Competitive labor, capital, and product markets would prevent insiders' overreaching the terms of insider trading contracts,[92] which may be either publicly or privately enforced.[93] But the Coase Theorem does not describe the

88. *See* Haddock & Macey, *supra* note 74, at 1449 n.1 (observing "the basic principle of corporate finance that a firm is a nexus of contractual relationships").

89. Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 15 (1960) (noting that "a rearrangement of rights will always take place if it would lead to an increase in the value of production").

90. They analogize insider trading to other forms of managerial compensation, which are addressed via private contract. *See, e.g.*, Carlton & Fischel, *supra* note 6, at 861-62.

> Salaries, bonuses, stock options, office size, vacation leave, secretarial support, and other terms of employment are all . . . properly left to private negotiation. Nobody would argue seriously that these terms and conditions of employment should be set by government regulation . . . . Most would agree that these decisions are better made through negotiations between firms and managers, given the constraints of capital, product, and labor markets as well as the market for corporate control.

Id. But see BEBCHUK & FRIED, *infra* note 107 (discussing the drawbacks of standard executive compensation contracts).

91. *See* Carlton & Fischel, *supra* note 6, at 866.

> [T]he allocation of the property right in valuable information to managers might not be optimal in all circumstances for every firm. But even if some firms would attempt to ban insider trading in the absence of regulation, other firms should nonetheless be able to opt out of the regulations if they so desire. No justification exists for precluding firms from contracting around a regulatory prohibition of insider trading.

Id.; *see also* Haddock & Macey, *supra* note 74, at 1467-68 (suggesting that some firms will desire a prohibition against insider trading, while other firms will not).

92. Carlton & Fischel, *supra* note 6, at 862-63 (noting that "[g]overnment need not prohibit [hypothetical compensation schemes whereby managers pay themselves huge salaries regardless of prerequisites] because, given competitive markets, firms will have a strong incentive to avoid such a scheme." The identical argument applies to insider trading: "If it is bad, firms that allow insider trading will be at a competitive disadvantage compared with firms that curtail insider trading.").

93. *See* Carlton & Fischel, *supra* note 6, at 890 (discussing merits of private versus public enforcement). *But see* Easterbrook, *supra* note 2, at 334-35 (suggesting that public enforcement of private insider trading

world in which insider trading contracts would be negotiated because, in the real world, transaction costs exist.

The two main transaction costs are: (1) negotiation costs and (2) enforcement costs. Advocates of private contracting argue the costs of negotiating insider trading contracts between firms and insiders would be minimal.[94] Professors Haddock and Macey argue further that the actual drafting costs would be *de minimis*, since a firm's articles of incorporation represent a preexisting contractual relationship between shareholders and managers.[95] As a result, it would be simply a matter of dropping a line or two (prohibiting or allowing insider trading) into the preexisting corporate contract. Critics of the "Coasian" approach do not see the costs as so slight.[96] One obvious cost is the cost of overcoming collective action problems among dispersed shareholders; another is the investment the parties would have to make to learn whether allowing insider trading is in their interest. Critics also argue the costs of enforcing private prohibitions of insider trading would be high. Judge Easterbrook, for example, argues it is too easy for insiders to hide their trading and it is too costly for firms to determine when an inside trade is based on "material" information.[97] Consequently, "[t]he overwhelming majority of violations will go undetected."[98] If private contracts prohibiting insider trading are not enforceable, firms will not write them in the first place, even if it is in their private (or the social) interest to do so,[99] or managers will write them for their private gain in the event shareholders do not recognize their unenforcability. If the contracts are enforceable, enforcement is itself a cost and, as is evident with shareholder derivative suits, the costs can be huge.

A second criticism of the "Coasian" approach to insider trading is that the assumption of zero external effects is unrealistic. The Coase theorem requires that all affected parties are privy to the negotiations. However, insider trading within the firm probably has spillover effects on non-shareholders, including other firms and the stock market generally.[100] In addition, intra-firm negotiations over insider trading exclude

contracts might be better than private enforcement of such contracts); Haddock & Macey, *supra* note 74, at 1462-63 n.28 (suggesting that stock exchanges might be efficient enforcers of private insider trading contracts between firms and shareholders).

94. *See* Carlton & Fischel, *supra* note 6, at 863 ("[T]he costs of negotiating contracts banning insider trading in the employer-employee situation appears to be low.").

95. Haddock & Macey, *supra* note 74, at 1449, n.1 ("For a publicly held firm, the preexisting contractual relationship that provides the basis for the privity of contract between shareholders and insiders manifests itself in the firm's articles of incorporation.").

96. *See, e.g.*, Klock, *supra* note 5, at 315 ("Firms have agency costs, and negotiations between managers and shareholders are not costless.").

97. Easterbrook, *supra* note 12, at 91-93.

98. *Id.* at 92.

99. *Id.* at 91 ("No firm has an incentive to suppress trading by its insiders on material information unless the private gains of doing so exceed the private costs."). *But see* Carlton & Fischel, *supra* note 6, at 865 (arguing that perfect enforcement is not required and that imperfect enforcement will yield gains that exceed the costs of contracting, if insider trading is detrimental to investors).

100. *See generally* Goshen & Parchomovsky, *supra* note 39 (discussing the spillover effects of insider trading on stock market liquidity and the market for information). For an interesting analysis of the potential spillover effects of outside trading, see Ian Ayres & Stephen Choi, *Internalizing Outsider Trading*, 101 MICH. L. REV. 313, 405 (2002) (arguing that regulators should focus on enabling the market to determine division between allowable and prohibited information).

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future shareholders, upon whom insider trading is also likely to have an impact.[101] Judge Easterbrook articulates the concern that firms prohibiting insider trading may not be able to capture the gains of doing so because of free-riding by firms that do not prohibit insider trading.[102] Professors Goshen and Parchomovsky argue that, in their private negotiations with insiders, firms will not consider the external benefits of prohibiting insider trading on market efficiency as reflected in more accurate stock prices and greater stock market liquidity.[103] Therefore, private contracting will lead to less than the socially optimal level of curtailment of insider trading among firms. The empirical results in Part V have important implications for this issue.[104]

Third, critics of the private contracting approach argue that uncertainty and asymmetric information will deter efficient private bargaining in the context of insider trading. Professor Cox, for example, contends that precisely because of the secret, non-transparent nature of insider trading, it is impossible for shareholders and insiders to efficiently contract over whether to allow it or not. This difficultly arises because efficient contracting requires "that parties know the costs and benefits of their actions."[105] Such knowledge seems unattainable in the insider trading context:

> [S]tockholders must not only be able to quantify the benefits—such as increased efficiency and more aggressive entrepreneurial activity—that they will receive from licensing managers to trade on confidential corporate information, but they also must know whether and by what amount these benefits will be accompanied by costs such as abusive insider-trading practices. [However,] it is difficult to quantify the gains attributable to entrepreneurial activity generally, let alone the gains attributable to each individual manager's contribution toward these benefits.
>
> Moreover, the costs of insider trading are open-ended. . . . [T]he opposite trader's insider-trading costs are beyond quantification. Furthermore, hidden costs associated with various abusive insider-trading practices must also be taken into account. . . . [T]he existence and magnitude of such costs pose an insolvable problem, especially in the context of ex ante contracting.[106]

In this respect, insider trading profits are distinguishable from other, more transparent forms of managerial compensation that firms and shareholders regularly contract over.[107]

101. *See* Klock, *supra* note 5, at 317 (observing that Coase theorem is not applicable because future shareholders do not participate in the negotiating).

102. Easterbrook, *supra* note 12, at 94-95. Easterbrook's concern is that firms that do not ban insider trading will mimic firms that do and thus the market will be unable to distinguish between the two types of firms. Such mimicry, if successful, will cause the market to over-discount the shares of the firms that ban insider trading and under-discount the shares of the firms that do not ban insider trading but pretend that they do. *Id.*

103. Goshen & Parchomovsky, *supra* note 39, at 1264.

104. *See* discussion *infra* Part V.

105. Cox, *supra* note 32, at 653.

106. *Id.* at 654.

107. *But see* LUCIAN BEBCHUK & JESSE FRIED, PAY WITHOUT PERFORMANCE: THE UNFULFILLED PROMISE OF EXECUTIVE COMPENSATION (2004) (arguing that executive compensation methods often obscure the amount of executive pay and the weak link between executive pay and performance).

The debate about whether private contracting is more efficient than government regulation of insider trading is closely related to the debate about whether insider trading is efficient. If insider trading is solely an agency issue, private contract *might* be an efficient way of addressing it *within* the firm. But, even in this case, public regulation may be superior to private contract for the reasons discussed above. However, if insider trading is detrimental to stock markets (that is, if insider trading has effects beyond the firm level), any argument in favor of private contract is greatly diminished, if not obliterated, notwithstanding the fact that an individual firm and its shareholders might be privately satisfied with a contractual approach to insider trading.

III. TESTABLE HYPOTHESES

Until recently, the law and economics debate about the desirability of regulating insider trading has been largely theoretical. Although scholars interested in insider trading have articulated highly refined theoretical arguments, these arguments, as we have seen, are offsetting, and actual knowledge of the effects of insider trading has not been advanced due to the dearth of empirical evidence. In this Part, I will draw on the theoretical law and economics literature and scholarship in financial economics, to formulate three testable hypotheses.

A. Insider Trading Law and Ownership Concentration

Judge Easterbrook notes that there have been few empirical assessments of the competing agency theories of insider trading.[108] One reason is the indeterminacy of theoretical agency models.[109] Another reason is that, "even with data the problem may be insoluble."[110] Mindful of these limitations, I first propose to indirectly test the agency implications of insider trading by examining how insider trading laws relate to ownership concentration. Concentrated corporate ownership has both costs and benefits. On the one hand, concentrated corporate ownership might improve monitoring and therefore increase firm value.[111] On the other hand, if ownership is too concentrated, large investors might

108. Easterbrook, *supra* note 12, at 89-90 ("There must be some effort to verify that the models' predictions describe the world. Efforts to verify the assessments provided by the agency models have been few and unsatisfactory.") (citations omitted).

109. *Id.* at 89 (noting "the theoretical work is indeterminate"). Judge Easterbrook suggests the following tests of the agency theories: "look at the relation between insiders' trading and other forms of compensation" or, more promising, "search for substitution between insider trading and other agency-cost-control devices," "look for price changes at times of changes in approaches to insider trading," examine "[w]hat happens when insider trading is detected at a given firm and prosecuted[.]" *Id.* at 96-97. Easterbrook cautions, however, that "[i]t would be foolish to put too much confidence in these tests." *Id.* at 97.

110. *Id.*

111. *See generally* Bhide, *supra* note 68 (stressing the positive role of large shareholders in corporate governance); Harold Demsetz, *Corporate Control, Insider Trading, and Rates of Return*, 76 AM. ECON. REV. 313 (1986) (arguing that large shareholders play an important role in corporate monitoring); Jensen & Meckling, *supra* note 11, at 343-49 (discussing the incentive effects of managerial (inside) ownership); Andrei Shleifer & Robert W. Vishny, *Large Shareholders and Corporate Control*, 94 J. POL. ECON. 461 (1986) (presenting a theoretical model showing that large shareholders may sometimes monitor managers and thereby increase firm value).

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be insufficiently diversified and firms might find it difficult to raise equity finance.[112]

Professor Maug presents a formal model in which insider trading might increase ownership concentration and agency costs. He shows that, under some circumstances, countries with more lax insider trading laws will have more concentrated corporate ownership.[113] In his mathematical model, there are three relevant parties: managers, large/dominant shareholders, and small shareholders. Large shareholders have two choices: (1) they may monitor managers and thereby mitigate agency costs, which benefits minority shareholders and increases corporate value, or (2) they may collude with managers and expropriate private benefits at the expense of the minority shareholders and corporate value. Insider trading law comes into play in the model in the following way. Large shareholders are more likely to monitor managers and company performance (option 1) when insider trading is illegal. In this manner, banning insider trading aligns the interests of dominant and minority shareholders. In contrast, when insider trading is not illegal, managers may bribe large shareholders not to monitor them by sharing inside information on which large shareholders may profitably trade (option 2). Thus, when insider trading is legal, insider trading profits are an opportunity cost of monitoring for large shareholders. If these profits are sufficiently high, dominant shareholders will forego monitoring altogether and collude with managers "to conceal adverse information and protect managers' private benefits of control" as well as their own trading profits.[114] As a result, minority investors will be more reluctant to invest in corporate shares when insider trading legislation is weak because the risk of expropriation by managers and dominant shareholders is high and therefore equity ownership will be more concentrated.[115]

In cross-country comparisons, Professors La Porta et al. find that countries with weaker investor legal protections tend to have more concentrated corporate ownership.[116] Professors La Porta et al. propose two reasons for this finding:

> First, large, or even dominant, shareholders who monitor the managers might need to own more capital, ceteris paribus, to exercise their control rights and thus to avoid being expropriated by the managers. . . . Second, when they are poorly protected, small investors might be willing to buy corporate shares only at such low prices that make it unattractive for corporations to issue new shares to the public. Such low demand for corporate shares by minority investors

112. La Porta et al., *Law and Finance*, *supra* note 8, at 1151.

113. Ernst Maug, *Insider Trading Legislation and Corporate Governance*, 46 EUR. ECON. REV. 1569 (2002).

114. *Id.* at 1585. Another condition is that the stock market is sufficiently liquid. *Id.* at 1583.

115. Professor Maug argues that insider trading legislation is "a prerequisite for dispersed ownership and liquid public markets." *Id.* at 1588; *see also* Ausubel, *supra* note 13, at 1023 (presenting a theoretical model in which insider trading might reduce outsiders' willingness to participate in the stock market and showing that a "disclose or abstain rule" increases investor confidence, defined as "the rational belief . . . that their return on investment is not being diluted by insiders' trading"). *But see* Brian R. Cheffins, *Does Law Matter?: The Separation of Ownership and Control in the United Kingdom*, 30 J. LEGAL STUD. 459, 460 (2001) (arguing that "a highly specific set of laws governing companies and financial markets does not need to be in place for [dispersed equity ownership] to become predominant," as long as "alternative institutional structures can perform the function the 'law matters' thesis implies the legal system needs to play").

116. La Porta et al., *Law and Finance*, *supra* note 8, at 1152.

> would indirectly stimulate ownership concentration. . . . [W]ith poor investor protection, ownership concentration becomes a substitute for legal protection, because only large shareholders can hope to receive a return on their investment.[117]

The fact that countries with weaker investor protection tend to have more concentrated ownership alone does not imply that agency costs are greater in countries with weaker investor protections or that agency costs are lower in countries with stronger investor protections, since ownership structure might be an efficient and/or endogenous adaptation to the legal environment.[118] However, it is at least consistent with such an interpretation.

Synthesizing Professor La Porta et al.'s findings with Professor Maug's theorizing suggests that if prohibiting insider trading is a form of investor protection and, in particular, if ownership concentration is a way of dealing with agency costs, ceteris paribus, ownership will tend to be more concentrated in countries with relatively lax insider trading laws, if insider trading increases agency costs. This is the first testable hypothesis.

> *Hypothesis 1* (H1): Countries with tougher insider trading laws have more outside ownership (greater ownership dispersion). Conversely, countries with weaker insider trading laws have more concentrated ownership.

But, as with Professor La Porta et al.'s results, even if the evidence strongly supports the hypothesis, there will be some ambiguity of interpretation. In particular, finding an inverse relationship between insider trading laws and ownership concentration does not necessarily imply that insider trading is costly to the firm. Concentrated ownership may be an endogenous mechanism for controlling agency costs and insider trading profits might be a way to compensate large investors for assuming undiversified positions and engaging in valuable corporate monitoring.[119]

B. Insider Trading Law and the Information Content of Stock Prices

One's view of how the market for corporate information works is likely to influence one's perspective on the effect of insider trading on stock price accuracy. Thus, opponents and proponents of insider trading regulation seem to have conflicting understandings of how the market for corporate information works (or should work). Opponents of insider trading laws tend to focus on intra-firm information markets, while proponents of regulation tend to look beyond the firm to the broader market context.[120] The relevant policy inquiry for the first group is whether the property right in corporate information should be assigned to insiders or to the firm (shareholders).[121] In contrast,

117. *Id.* at 1145.

118. *Id.*

119. *See* Bhide, *supra* note 68, at 43; Demsetz, *supra* note 111, at 315.

120. Goshen & Parchomovsky, *supra* note 39, at 1232 (arguing that some "Law and Economics scholars have limited the list of potential entitlement holders to two: the managers and the shareholders . . . . [T]he scope of the inquiry has been restricted to the boundaries of the firm"). They contrast "insider-based information market" with "analyst-based information market." *Id.* at 1237.

121. As we have seen, opponents of insider trading regulation favor either assigning this property right to insiders or relegating allocation of this right to private contract, with such allocation to be determined on a firm by firm basis.

the second group takes a more comprehensive view of the market for corporate information and sees strong public good features in corporate information.[122]

Professors Goshen and Parkomovsky, proponents of insider trading regulation, posit four types of participants in the capital market: insiders, information traders (or analysts), liquidity traders, and noise traders, which they define as follows:

> *Insiders* have access to inside information due to their proximity to the firm. They also have the knowledge and ability to evaluate this information and to price it.
>
> *Information traders*, the second group, lack access to inside information, but are willing and able to devote resources to gathering and analyzing information as a basis for their trading. . . .
>
> [*L*]*iquidity traders*, [do] not collect and evaluate information; rather, their investment reflects their individual allocation of resources between savings and consumption. . . . [I]f rational, [they] will follow a strategy of buying and holding a portfolio of shares.
>
> Finally, *noise traders* . . . act irrationally, following different methods of investment either as individuals or as a group. Noise traders often believe that they are in possession of valuable information and invest as if they are information traders. In such cases, other market participants cannot separate noise traders from true information traders.[123]

Only trading by insiders and information traders (stock market analysts) is likely to enhance stock price accuracy. Both of these groups utilize the information that they have in order to profit from a divergence between a stock's true value and its current market price.[124] They buy when the stock is undervalued, causing its price to rise, and they sell when the stock is overvalued, causing its price to fall.[125] In this manner, both insiders and information traders improve stock price accuracy.

It should be fairly obvious why insiders' trading might enhance stock price accuracy. They are privy to firm-specific information before it is disclosed to the public. When they have material firm-specific information that nobody else has, they are the first to perceive and to trade on such information. Their trading moves the stock price in the correct direction, as other market participants infer the existence of new information by observing trading volume and price movements.[126] Information traders, who compete with inside traders, also enhance stock price accuracy. Unlike insiders, however, they are

122. *See, e.g.*, Goshen & Parchomovsky, *supra* note 39, at 1258 (describing the public good attributes of corporate information).

123. *Id.* at 1237-38.

124. *Id.* at 1238-39.

125. *Id.* at 1239.

126. *See* Gilson & Kraakman, *supra* note 59, at 572-79 (describing how investors might infer the nature of the inside information by observing trading volume or price movements, particularly if they are able to infer the identity of the inside traders). *See generally* MANNE, *supra* note 3, at 86-90 (describing how insider trading moves the stock price in the "correct" direction).

not privy to firm-specific information before it is publicly disclosed. Instead, they invest time and resources in discovering and analyzing general market information and firm-specific information.[127] Their analysis of this information enables them to value a stock and to determine whether its current market price diverges from their estimated valuation.[128] The profits that informed traders earn from trading against less informed parties give them the incentive to conduct research and analysis.[129]

When insider trading is legal, informed traders are at a clear disadvantage relative to insiders, who will systematically beat them.[130] The amount of trading by informed traders is, according to Professors Goshen and Parchomovsky's model, therefore, inversely related to the amount of insider trading. When insider trading is legal, information traders will reap a lower return on their investment in information gathering and analysis and therefore conduct less of both. Thus, Professors Goshen and Parchomovsky expect insider trading to stifle the development of an analyst market.[131] In contrast, if "insider trading is illegal, 'a competitive analysts' market will form," according to Professors Goshen and Parchomovsky.[132] "This substitution effect between insiders and analysts is the key to understanding the ban on insider trading."[133] The policy question that naturally emerges is whether the government should favor one group (analysts versus insiders) over the other in setting insider trading policy. For Professors Goshen and Parchomovsky, this inquiry essentially boils down to: "[W]hich group—insiders or analysts—is better able to" promote price accuracy?[134]

Some proponents of insider trading regulation, including Professors Goshen and Parchomovsky, argue that analyst trading yields more efficient stock prices than insider trading, since informed traders are more adept than insiders at pricing both firm-specific and general market information.[135] There is considerable support for this position in the finance literature. Finance scholars have long noted the superiority of (non-insider) informed traders relative to insiders in promoting efficient stock prices.[136] Presumably,

127. Goshen & Parchomovsky, *supra* note 39, at 1237-38.

128. *Id.*

129. *See* Michael J. Fishman & Kathleen M. Hagerty, *Insider Trading and the Efficiency of Stock Prices*, 23 RAND J. ECON. 106 (1992) (presenting a formal model of the effect of insider trading on informed traders' incentives to acquire information and trade); *see also* Jhinyoung Shin, *The Optimal Regulation of Insider Trading*, 5 J. FIN. INTERMEDIATION 49, 59-61 (1996) (showing the effect of insider trading on market professionals' trading profits).

130. Goshen & Parchomovsky, *supra* note 39, at 1240-41.

131. *Id.* at 1241-42.

132. *Id.* at 1243; *see also* Fishman & Hagerty, *supra* note 129 (presenting an economic model of the effect of insider trading on the degree of competition in the market for information, where the competitive parties are insiders and informed outsiders); Shin, *supra* note 129, at 53-55 (modeling the role of insider trading regulation in promoting competition between market professionals (informed traders) and insiders). For empirical evidence that supports this proposition, see Bushman et al., *supra* note 77 (finding, using cross-country data, that analyst participation increases after countries initially enforce their insider trading laws).

133. Goshen & Parchomovsky, *supra* note 39, at 1243.

134. *Id.* at 1243.

135. *See, e.g.*, *id.* at 1246-51.

136. *See, e.g.*, Kenneth R. French & Richard Roll, *Stock Return Variances: The Arrival of Information and the Reaction of Trades*, 17 J. FIN. ECON. 5 (1986); Sanford Grossman, *On the Efficiency of Competitive Stock Markets Where Traders Have Diverse Information*, 31 J. FIN. 573 (1976); Randall Morck et al., *The Information Content of Stock Markets: Why Do Emerging Markets Have Synchronous Stock Price Movements?*, 58 J. FIN. ECON. 215 (2000); Richard Roll, R^2, 43 J. FIN. 541 (1988).

informed investors' trading generates more informative stock prices than insiders' trading, because the external market for information is more competitive than the internal information market.[137] If it is true that analyst (informed) trading yields more efficient price discovery than insider trading, stock prices will be less informative when insider trading is legal, since there will be less informed trading when insiders may freely trade on the basis of private information. This leads to the second testable hypothesis.

> *Hypothesis 2* (H2): Countries with more stringent insider trading laws have more accurate stock prices. Conversely, countries with more lax insider trading laws have less accurate stock prices.

C. Insider Trading Law and Liquidity

Opponents of insider trading regulation believe either that insider trading is not detrimental to stock market liquidity or that any harmful impact that it might have on liquidity is offset by other benefits. In contrast, proponents of insider trading regulation believe insider trading compromises stock market liquidity, without offering sufficient offsetting benefits, if any. Insider trading might adversely affect liquidity through at least two channels: (1) by raising the transaction costs of trading, and (2) by reducing the number of informed traders, who provide liquidity to the stock market.

The first way in which insider trading might reduce stock market liquidity is by raising the transaction costs of trading. Some market microstructure studies in the finance literature show that a high degree of asymmetric information among traders can lead to greater transaction costs in trading, thus compromising market liquidity.[138] Market makers generally subsidize their trading losses to better informed traders by increasing the *bid-ask spread*, which is the difference between the price at which they are willing to sell (offer) and the price at which they are willing to buy (bid) a stock.[139] The greater the degree of asymmetric information, the greater the bid-ask spread. This increase in the bid-ask spread means that transaction costs of trading are higher, and therefore stock market liquidity is lower.[140] Since insider trading is the most extreme form of firm-specific asymmetric information, this logic suggests that it should have a greater adverse effect on stock market liquidity than other types of informed trading,[141] because market

137. Goshen & Parchomovsky, *supra* note 39, at 1250-51 and corresponding notes.

138. *See, e.g.*, Thomas E. Copeland & Dan Galai, *Information Effects on the Bid-Ask Spread*, 38 J. FIN 1457 (1983); Lawrence R. Glosten & Lawrence E. Harris, *Estimating the Components of the Bid/Ask Spread*, 21 J. FIN. ECON. 123 (1988); Hayne Leland, *Insider Trading: Should it be Prohibited?*, 100 J. POL. ECON. 859 (1992); H. Nejat Seyhun, *Insiders' Profits, Costs of Trading, and Market Efficiency*, 16 J. FIN. ECON. 189 (1986). This work builds on Akerlof's original insight that markets malfunction in the presence of asymmetric information and, in extreme cases, may break down entirely. Akerlof, *supra* note 72.

139. *See* sources cited *supra* note 138.

140. *See, e.g.*, Hans R. Stoll, *Inferring the Components of the Bid-Ask Spread: Theory and Empirical Tests*, 44 J. FIN. 115, 132 (1989) (finding that forty-three percent of the bid-ask spread of NASDAQ/National Market System stocks is due to adverse information costs).

141. *See, e.g.*, Goshen & Parchomovsky, *supra* note 39, at 1252.

> The uninformed market maker faces the problem of asymmetric information when trading either against analysts or against insiders; both groups have an information edge. However, trading by insiders imposes much greater risk on the uninformed market maker. Insiders, due to their

makers will raise bid-ask spreads to reflect the possibility that they are trading against more informed corporate insiders.[142]

The second way insider trading might reduce stock market liquidity is by reducing competition in the market for information. As discussed above, allowing insiders to trade on private information gives them a short-term monopoly over an important class of valuable information and, therefore, a monopoly over the trading profits enabled by that information.[143] The inability to compete successfully in the market for relevant information causes informed traders (analysts) to exit the market, leading to lower trading volume, since informed traders provide liquidity to the market.[144] Informed traders are not expected to exit the market entirely because they do have an informational advantage relative to market makers, but this advantage is smaller than the insiders' informational advantage relative to market makers. Consequently, informed trading in a stock market in which insider trading is illegal yields lower transaction costs than insider trading in a stock market in which insider trading is legal.[145] Hence follows the third testable hypothesis.

> *Hypothesis 3* (H3): Countries with more stringent insider trading laws have more liquid stock markets. Conversely, countries with more lax insider trading laws have less liquid stock markets.

Thus Part V will examine empirically the following three hypotheses.

Hypothesis 1 (H1)	Equity ownership is more dispersed (i.e., less concentrated) when insider trading laws are more stringent.
Hypothesis 2 (H2)	Stock prices are more informative when insider trading laws are more stringent.
Hypothesis 3 (H3)	The stock market is more liquid when insider trading laws are more stringent.

But before I turn to the empirical tests in the next Part, I describe the data.

> exclusivity over inside information, can manipulate the timing and volume of their trades, a fact which increases the risk of the uninformed market maker trading against them.

Id.

142. *See supra* note 138 and accompanying text.

143. *See* Fishman & Hagerty, *supra* note 129; Georgakopoulos, *supra* note 70; Goshen & Parchomovksy, *supra* note 39, at 1260.

144. Bushman et al., *supra* note 77, at 36; Georgakopoulos, *supra* note 70; Goshen & Parchomovksy, *supra* note 39.

145. *See, e.g.*, Goshen & Parchomovsky, *supra* note 39, at 1252.

> [A]nalysts, even when enjoying an informational advantage, will always hold diverging opinions as to the exact impact of the information on stock prices, and their trade orders will therefore diverge from one another. This, in turn, reduces the risk faced by the uninformed market maker. In addition, because analysts face competition from other analysts, they cannot manipulate or time their orders. Thus, trading by analysts presents the uninformed market maker with a much lower risk relative to trading by insiders.

Id.

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IV. DESCRIPTION OF THE DATA

My sample consists of stock market and other economic data from a cross-section of thirty-three countries. The countries vary along several important dimensions, including the efficiency, transparency and regulation of their stock markets, their corporate laws and corporate governance structures, their legal traditions, and the quality of their law enforcement and other institutions. The stock markets in the sample range from long-established and highly developed stock markets to newly emerging stock markets. Some of the markets have relatively strong securities (that is, disclosure and antifraud) laws, and others have relatively lax securities laws. They also vary in the strength of their insider trading laws and enforcement mechanisms.

A. Data Sources

1. The Dependent Variables

Testing the three hypotheses requires measures of ownership dispersion, stock price informativeness, and stock market liquidity. These measures come from several sources. First, the ownership data come from Professors La Porta et al.[146] They define ownership concentration as the average ownership concentration of the three largest shareholders in the ten largest private non-financial firms in the economy as of the mid-1990s.[147] I define ownership dispersion as one minus Professors La Porta et al.'s ownership concentration measure. Thus defined, ownership dispersion is the average fraction of shares owned by all shareholders in the ten largest private, non-financial firms in the economy, excluding the three largest shareholders in each of these firms. This ownership dispersion measure is admittedly problematic. I use Professors La Porta et al.'s ownership measure because there is no better comparative measure available. Nevertheless, I recognize its serious flaws. The use of only ten companies from the tail of the distribution to characterize ownership concentration in the economy at large is questionable, and the decision to determine concentration within those companies by looking at the holdings of three shareholders is somewhat arbitrary. On the other hand, in many countries the ten largest companies constitute the bulk of stock market capitalization (value). Moreover, in many countries outside the United States, three or fewer shareholders hold most of a company's outstanding shares. Nevertheless, for these reasons, as well as the ambiguity of hypothesis-consistent results pointed out above, the test of H1 is necessarily a weak test.

Second, Professors Morck, Yeung, and Yu's measure of stock-price synchronicity is a proxy for stock price informativeness.[148] This variable measures the degree to which the stock prices of different firms moved together in an average week in 1995. Greater synchronicity (co-movement) of stock returns implies that a larger proportion of stock return variation is explained by market-wide than by firm-specific factors, suggesting that stock prices are less informative of firm-specific strengths and weaknesses.

Information on stock market liquidity comes from the International Finance

146. La Porta et al., *Law and Finance*, *supra* note 8, at 1145-51.

147. *Id.* at 1145-46.

148. Morck et al., *supra* note 136.

Corporation's (IFC) 1996 Emerging Stock Markets Factbook.[149] The IFC reports stock market turnover, a common measure of liquidity, which is the ratio of the total value traded to total stock market capitalization.[150] For each country in the sample, I use the average turnover ratio from 1991 through 1995. Illustration 4 describes the dependent variables.

2. Insider Trading Regulation and Enforcement

a. Insider Trading Law Variables

Since most countries with stock exchanges (and all of the countries in the sample) forbid corporate insiders to trade on the basis of price-sensitive, private information, I do not code this common/basic prohibition.[151] I code four elements of countries' insider trading laws as they existed as of the mid-1990s on the basis of *a priori* reasoning about which elements of insider trading laws are substantively (or, doctrinally) significant, with an emphasis on deterrence.[152] Taken together, these four elements of each country's insider trading law constitute the overall insider trading law measure for that country.

The first element, *Tipping*, equals one if a corporate insider is liable for giving price-sensitive, private information to an outsider (so-called "tippee"[153]) and encouraging her to trade, and zero otherwise. Forbidding a corporate insider to trade on inside information, while at the same time allowing her to tip outsiders who subsequently trade, is equivalent to allowing the insider to trade on her own behalf.[154] In some countries, insiders are liable for tipping outsiders, while those whom they have tipped are not liable for their subsequent trading on such information.[155] A prohibition on trading by insiders is arguably less meaningful if insiders can tip outsiders with impunity. Most countries that prohibit insider trading also prohibit insiders' tipping of outsiders.[156]

A tippee is a third person (a corporate outsider) who has been tipped about material, non-public information by an insider (a director, manager, employee, etc.). The second element, *Tippee*, equals one if tippees, like corporate insiders, are forbidden to trade on price-sensitive, private information, and zero otherwise.[157]

The third element, *Damages*, equals one if the potential monetary penalty for violating a country's insider trading law is greater than the illicit insider trading profits, and zero otherwise. If the potential monetary penalty is less than the expected profits from insider trading, the insider trading law's deterrent effect is weaker, holding constant the probability of detection.[158]

The fourth and final element, *Criminal*, equals one if insider trading is a criminal offense in the country, and zero otherwise. In some cases, criminal sanctions might yield more efficient deterrence than monetary sanctions.[159] One case is where the likelihood of detection is very low and the optimal monetary penalty is thus greater than the violator's net wealth. In such a case, criminal prosecution leading to imprisonment or other non-

149. INTERNATIONAL FINANCE CORP., EMERGING STOCK MARKETS FACTBOOK (1996) [hereinafter EMERGING MARKETS FACTBOOK].

150. For other common measures of stock market liquidity, see generally David A. Lesmond, *Liquidity of Emerging Markets*, 77 J. FIN. ECON. 411 (2005) (comparing price-based liquidity measures to volume-based liquidity measures); Geert Bekaert, Campbell R. Harvey & Christian Lundblad, *Liquidity and Expected Returns: Lessons from Emerging Markets* (Nat'l Bureau of Econ. Research, Working Paper No. W11413, 2005) (using transformation of the proportion of zero daily firm returns).

151. Price-sensitive information is generally defined as information that would significantly affect the stock's price. The standards for determining whether information is price-sensitive vary across countries and contexts, as Euronext, the pan-European Exchange, notes:

> Whether or not information is price sensitive depends on factors specific to each individual company, such as its size, recent history and sector of activity. Market sentiment can also have a marked effect on price sensitivity. Given these considerations, it is not possible to produce one definition of price sensitivity that takes all of these factors into account. For the same reason, it is impossible to indicate what percentage increase or decrease in a share price qualifies as a 'significant impact' on prices.

EURONEXT AMSTERDAM, PRICE-SENSITIVE INFORMATION 9 (2003), http://www.euronext.com/vgn/images/portal/cit_53424/55/32/66175905901789_OA1_Price-sens.pdf. . Consequently, I do not code price-sensitivity (materiality) standards because doing so would introduce excessive subjectivity into my measure of insider trading law. I do not code scienter requirements and fiduciary standards for the same reason. At any rate, the requirement of a fiduciary nexus between the source of the information and the person engaging in insider trading is virtually unique to common law countries, and particularly the United States. *See, e.g.*, Dirks v. SEC, 463 U.S. 646, 654 (1983); Chiarella v. United States, 445 U.S. 222, 232 (1980). Finally, I also do not code the misappropriation theory of liability for insider trading. *See* United States v. O'Hagan, 521 U.S. 642 (1997). However, one study does code misappropriation liability in addition to my insider trading law index. Duncan Herrington, Insider Trading Enforcement and Market Performance (May 3, 2004) (unpublished manuscript, on file with author).

152. *See, e.g.*, STEPHEN M. BAINBRIDGE, SECURITIES LAW: INSIDER TRADING (1999); ROBERT CLARK, CORPORATE LAW (1986); WILLIAM H. PAINTER, FEDERAL REGULATION OF INSIDER TRADING (1968); WILLIAM K.S. WANG & MARC I. STEINBERG, INSIDER TRADING (1997); Brudney, *supra* note 1; Reinier Kraakman, *The Legal Theory of Insider Trading Regulation in the United States*, *in* EUROPEAN INSIDER DEALING 47, 50 (Klaus J. Hopt & Eddy. Wymeersch eds., 1991). My sources of information about countries' insider trading laws are INSIDER TRADING: THE LAWS OF EUROPE, THE UNITED STATES, AND JAPAN (Emmanuel Gaillard ed., 1992) and INTERNATIONAL INSIDER DEALING (Mark Stamp & Carson Welsh eds., 1996).

153. A tippee is an outsider who has received a "heads-up" (or tip) about price-sensitive, private information by a corporate insider (a director, manager, employee, advisor, etc.).

154. As Professor Brudney notes, "[T]he insider, by giving the information out selectively, is in effect selling the information to its recipient for cash, reciprocal information, or other things of value for himself, including possibly prestige or status or the like." Brudney, *supra* note 1, at 348.

155. *See infra* Illustration 4.

156. *See infra* Illustration 4.

157. "[R]eceipt of the information by one who is such a selected beneficiary taints the recipient so that he should no more be entitled to use it in trading than was the donor." Brudney, *supra* note 1, at 348.

158. Of course, the probability of detection is not constant; some countries have better detection technology than others. When the probability of detection is very low, the monetary penalty must be greater than the insider's expected gain to yield the efficient level of deterrence. Michael P. Dooley, *Enforcement of Insider Trading Restrictions*, 66 VA. L. REV. 1, 26 (1980); Easterbrook, *supra* note 12, at 93-94. *See generally* A. Mitchell Polinsky & Steven Shavell, *The Economic Theory of Public Enforcement of Law*, 38 J. ECON. LIT. 45 (2000) (modeling mechanisms for efficient public enforcement of laws). In fact, very high monetary sanctions might be desirable if they accommodate low detection probabilities and thus economize on enforcement costs. *Id*.

159. Polinsky & Shavell, *supra* note 158. One case is where the likelihood of detection is very low and the optimal monetary penalty is thus greater than the violator's net wealth. In such a case, criminal prosecution leading to imprisonment or other non-monetary sanctions might yield optimal deterrence. Easterbrook, *supra* note 12. Criminal sanctions might also have the opposite effect, however, since in most jurisdictions criminal prosecution requires a higher standard of proof. A higher burden of proof reduces the probability of success of prosecution and increases enforcement costs. This should make finding a statistically significant coefficient on *Criminal* unlikely.

monetary sanctions might yield optimal deterrence.[160] Criminal sanctions might also have the opposite effect, however, since in most jurisdictions criminal prosecution requires a higher standard of proof. A higher burden of proof reduces the probability of successful prosecution and increases enforcement costs. This should make finding a statistically significant coefficient on *Criminal* unlikely. The preceding analysis is true only if criminal sanctions displace civil sanctions. However, if criminal sanctions are imposed in conjunction with civil sanctions, unless they are never used, they should have a deterrent effect, if only because the cost of defending a criminal prosecution is a sanction whether or not the crime is proven. Insider trading is both a criminal and a civil offense in several jurisdictions.

A country's insider trading prohibition can be characterized along two broad (although not exhaustive) dimensions: the *scope* of the activities that it prohibits and the *sanctions* for violating it. I thus create two sub-indices of insider trading law, which correspond roughly to these separate aspects. The first sub-index, *Scope*, is the sum of *Tipping* and *Tippee*. The insider trading prohibition is broader if it prohibits insiders both from trading *and* from tipping third parties. It is broader still if it also forbids tippees to trade. The second sub-index, *Sanction*, is the sum of *Damages* and *Criminal* and is a rough proxy for the expected cost of violating a country's insider trading laws. Potential violators are assumed to compare the expected benefits to the expected costs of breaking the law, a reasonable assumption, particularly when the motivation for the crime is financial gain.[161] Holding constant the expected benefit, the greater the expected cost, the greater the law's deterrent effect. Since I do not have data on the expected benefits of violating insider trading laws, my analysis implicitly assumes that they are constant within and across countries. This assumption is less reasonable than the deterrence assumption because the incidence of and profits from insider trading may vary systematically with legal and institutional differences across the countries and contexts within which such trading occurs.[162] It is expected, though not guaranteed, that the failure of this assumption will add noise to the analysis rather than systematically bias it.

I also create an aggregate insider trading law index, *IT Law*, which is the sum of the two sub-indices, *Scope* and *Sanction*. Abstracting from enforcement, an *IT Law* score of zero represents the most lax insider trading regime, while an *IT Law* score of four represents the most prohibitive insider trading regime. Illustration 4 describes the insider trading law variables in detail.

b. Enforcement Environment

In addition to the potential criminal or monetary sanctions for violating insider trading laws, their deterrent effect also depends on the probability (actual or perceived)

160. Easterbrook, *supra* note 12, at 94.

161. *See* Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169 (1968) (using an economic analysis to develop policies on crime); Polinsky & Shavell, *supra* note 158.

162. *See, e.g.*, Arturo Bris, *Do Insider Trading Laws Work?*, 11 EUR. FIN. MGMT. 267 (2005) (measuring the profitability of insider trading across countries); Abraham Ackerman & Ernst Maug, Insider Trading Legislation and Acquisition Announcements: Do Laws Matter? (2005) (unpublished manuscript, on file with author) (also measuring the profitability of insider trading across countries).

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that they will be enforced.[163] In this regard, two dimensions of enforcement are relevant: *actual* (or *past*) enforcement and enforcement *power* (or *potential*), both of which potential violators should consider in deciding whether to risk violating the law.

Although there is little systematic information on actual enforcement or enforcement power across countries, a few rough proxies exist. For actual enforcement, I use information on countries' enforcement histories from Professors Bhattacharya and Daouk.[164] Their enforcement information consists of the year in which a country enforced its insider trading rules for the first time. I convert this information into the variable *Enforced by 1994*, which equals one if a country had enforced its insider trading rules for the first time by 1994 and zero otherwise. I choose 1994 as the cut-off date because the dependent variables (ownership dispersion, stock price synchronicity, and stock market turnover) come from the mid-1990s and because the insider trading law indices are based on the sample countries' insider trading rules as they existed around that time.[165]

For enforcement power, I construct two separate measures: *public* enforcement power and *private* enforcement power. My division of enforcement power into public and private dimensions is inspired by the theoretical inquiry about who should enforce a particular public law.[166] To construct public enforcement power, I rely on securities regulatory information compiled by Professors La Porta et al. based on a survey of domestic lawyers concerning, among other things, the attributes and investigative powers of the securities market supervisor.[167] The supervisor's attributes include four elements that address the supervisor's independence, focus and power: (1) supervisor appointment process; (2) supervisor tenure; (3) focus of supervisor's activities; and (4) supervisor's

163. *See, e.g.*, FRANKLIN E. ZIMRING & GORDON J. HAWKINS, DETERRENCE: THE LEGAL THREAT IN CRIME CONTROL 160-63 (University of Chicago Press 1973) (explaining that as the risk of being caught goes up, the rate of crime goes down).

164. Bhattacharya & Daouk, *supra* note 72.

165. Both the content and the enforcement of these laws might have changed in many of these countries since 1994. See Herrington, *supra* note 151, for more recent measures of insider trading rules that build upon my original insider trading law index and enforcement across countries. Herrington's results confirm my original findings.

166. *See, e.g.*, JAMES M. LANDIS, THE ADMINISTRATIVE PROCESS (Yale University Press 1938); Edward Glaeser et al., *Coase versus the Coasians*, 116 Q.J. ECON. 853 (2001); Jonathan R. Hay & Andrei Shleifer, *Private Enforcement of Public Laws: A Theory of Legal Reform*, 88 AM. ECON. REV. 398 (1998); La Porta et al., *What Works?, supra* note 8; Shavell & Polinsky, *supra* note 158. La Porta et al. address the relative advantages and disadvantages of private and public enforcement of securities laws. Under their *public enforcement* hypothesis,

> [p]ublic enforcement might work because the enforcer is *independent and focused* and thus can regulate markets free from political interference, because the enforcer can *introduce regulations of market participants*, because it can *secure information* from issuers and market participants—through subpoena, discovery, or other means—more effectively than private plaintiffs, or because it can *impose sanctions.*

La Porta et al., *What Works?, supra* note 8, at 3. Under their *private enforcement* hypothesis, the main advantage of securities laws is to reduce the costs of private contracting by mandating disclosure and delineating standards of liability for issuers and intermediaries. *Id.* at 2.

167. La Porta et al., *What Works?, supra* note 8. I am implicitly assuming that the sample countries' relative rankings in terms of these measures have not changed significantly between the mid-1990s and the time when La Porta et al. conducted their survey, which was around 2002-2003.

rulemaking authority. Professors La Porta et al. compute the supervisor characteristics index as the mean of these four attributes.[168] A higher mean signifies that the securities market supervisor is more independent of the political process and has greater authority. Professors La Porta et al. also construct an index of the supervisor's investigative powers, which equals the mean of the supervisor's power to command documents and to subpoena the testimony of witnesses during investigations of violations of the country's securities laws.[169] Using these two measures, I create the variable *Public Enforcement Power* as the mean of Professors La Porta et al.'s supervisor characteristics and investigative powers indices.[170] Illustration 4 describes *Public Enforcement Power* and its components in greater detail.

To construct a measure of private enforcement power, I first consider whether ("injured"[171]) investors may bring private suits against alleged transgressors of the country's insider trading laws. A private right of action gives particular investors (usually those who traded contemporaneously with the insider) or the corporation access to the courts to sue insiders for trading on inside information. For example, some jurisdictions give individual investors the right to sue for monetary compensation for their alleged trading losses because they have traded at the opposite end of an insider transaction. Private rights to sue might increase investors' incentives to enforce the country's insider trading laws independent of any action taken by the relevant regulatory authority.[172] Therefore, holding constant the reliability and efficiency of the court system, the availability of a private right of action might render the law more effective by giving private parties an incentive to enforce it. The variable *Private Right* equals one if such a right exists, and zero otherwise. Private litigation is meaningful only to the extent that the judicial system is reliable and efficient, however.[173] Thus, I construct an index , *Private Enforcement Power*, as the product of an index of the efficiency of the judiciary[174] and *Private Right*. As Professor Merritt Fox notes, however, "countries that have a private right of action to support rules against insider trading probably have a quite different kind of legal system in other broader regards."[175] I address this issue by controlling for the legal system in the regressions in Part V. Illustration 4 describes *Private Enforcement Power* and its components in greater detail.

168. La Porta et al., *What Works?*, *supra* note 8.

169. *Id.*

170. *Id.* at 15-16.

171. There is some theoretical debate about whether individual investors are "harmed" by insider trading in public stock markets. Some scholars argue that it is practically impossible to identify individuals or groups harmed by insider trading, since any cost of trading against better informed insiders is distributed across all investors. *See, e.g.*, William Carney, *Signaling and Causation in Insider Trading*, 36 CATH. U. L. REV. 863 (1987) (stating the above proposition); William Wang, *Trading on Material Nonpublic Information on Impersonal Stock Markets: Who is Harmed, and Who Can Sue Whom Under SEC Rule 10b-5?*, 54 S. CAL. L. REV. 1217 (1981) (same). At any rate, in the United States, "it has long been clear that persons who traded contemporaneously with an inside trader have a private cause of action." STEPHEN M. BAINBRIDGE, SECURITIES LAW: INSIDER TRADING 123 (1999).

172. Of course, private enforcement might be abusive or insufficient. *See, e.g.*, Dooley, *supra* note 158, at 15-17 (1980); Polinsky & Shavell, *supra* note 158, at 45 (2000). Nevertheless, this does not change the analysis. It merely goes to the issue of the optimal level of regulation, which is beyond the scope of this Article.

173. *See, e.g.*, Glaeser et al., *supra* note 166; Hay & Shleifer, *supra* note 166.

174. La Porta et al., *What Works?*, *supra* note 8, at 10.

175. Private conversation with Professor Merritt Fox.

3. Additional Economic, Legal and Institutional Variables

To isolate the relationship between insider trading regulation and the dependent variables, in the regression analyses below, I control for several additional factors that prior research suggests are also relevant to financial market structure and performance. First, since economic development is generally associated with greater financial market development and better institutions and law enforcement capabilities,[176] I control for the logarithm of per capita gross domestic product (GDP).[177] Second, since stock market liquidity is positively associated with economic growth,[178] I control for the growth of GDP per capita. Third, I control for anti-director rights,[179] and legal origin,[180] since prior research demonstrates that these measures of the quality of investor legal protections have an important bearing upon financial development.[181] In particular, prior studies find that countries with common law legal origins tend to have greater legal protections for investors and that both factors—common law legal origin and greater anti-director rights—are positively associated with stock market development.

Finally, I control for disclosure, since better disclosure is associated with greater stock market development.[182] In addition, timelier and higher quality information disclosure should reduce insiders' opportunity to trade profitably relative to the rest of the market, thereby reducing their incentive to violate the law.[183] I use two measures of disclosure quality. The first is a measure of legal disclosure requirements from Professors La Porta et al.[184] This index, *Disclosure*, is an arithmetic average of five categories of

176. *See, e.g.*, DOUGLAS NORTH, STRUCTURE AND CHANGE IN ECONOMIC HISTORY (1981); Rafael La Porta et al., *The Quality of Government*, 15 J.L. ECON. & ORG. 222, 225-26 (1999).

177. Also, wealthier countries should have (access to) more advanced surveillance technologies to detect insider trading violations.

178. *See* Raymond Atje & Boyan Jovanovic, *Stock Markets and Development*, 37 EUR. ECON. REV. 632 (1993); Ross Levine & Sara Zervos, *Stock Markets, Banks, and Economic Growth*, 88 AM. ECON. REV. 537, 546 (1998).

179. Djankov et al., *Self-Dealing*, *supra* note 8, at 28-29.

180. La Porta et al., *Legal Determinants, supra* note 8, at 1131-32.

181. *Id.* at 1149; La Porta et al., *Law and Finance, supra* note 8, at 1115-16.

182. *See* Jere R. Francis et al., *The Role of Accounting and Auditing in Corporate Governance and the Development of Financial Markets Around the World*, 10 ASIA-PAC. J. ACCT. & ECON. 1 (2004); La Porta et al., *Law and Finance*, *supra* note 8; La Porta et al., *Legal Determinants*, *supra* note 8; La Porta et al., *What Works?*, *supra* note 8, at 5-11.

183. Academics and lawmakers have long noted the close relationship between disclosure rules and insider trading laws. Indeed, an important pillar of U.S. insider trading legislation is the "disclose or abstain" rule, which requires that insiders either disclose material nonpublic information or refrain from trading on the basis of such information. *See generally* Stanley Baiman & Robert E. Verrecchia, *The Relation Among Capital Markets, Financial Disclosure, Production Efficiency, and Insider Trading*, 343 J. ACCT. RES. 1, 9-12 (1996) (showing that greater voluntary disclosure reduces the extent of insider trading in a firm's shares); Maug, *supra* note 113, at 1581 n.18; Jesse M. Fried, *Reducing the Profitability of Corporate Insider Trading Through Pretrading Disclosure*, 71 S. CAL. L. REV. 303 (1997) (arguing that a rule that would require insiders to disclose their identities and intentions to trade prior to trading would reduce considerably, and perhaps even eliminate, insider trading profits); Shin, *supra* note 129 (demonstrating that some restriction of insider trading combined with minimal disclosure requirements is the optimal approach to regulating insider trading).

184. La Porta et al., *Legal Determinants*, *supra* note 8.

information that firms are required to include in their offering prospectuses: (1) compensation; (2) ownership structure; (3) inside ownership; (4) irregular contracts; and (5) related party transactions. The second measure is the quality of accounting standards, *Accounting*, which ranks countries on the basis of the quality of their corporate disclosure practices as of 1990.[185] *Disclosure* is a rough proxy for the strength of the involuntary disclosure regime at the initial offering stage, while *Accounting* is a rough proxy for the quality of periodic (post-offering) disclosure and measures firms' actual disclosure practices rather than legal disclosure requirements per se.[186] Illustration 4 describes all of the control variables in detail.

B. Descriptive Statistics

Illustration 5 presents the insider trading laws and enforcement measures for the sample countries, according to their legal origins: English common law or European civil law.[187] Illustration 5 also presents the average of each insider trading law and enforcement measure for each of the four legal origin groups and for all civil law countries and all the common law countries. I present the insider trading variables for the sample countries by their legal origins because previous research shows that corporate and securities laws differ significantly among countries according to their legal origins.[188] In particular, common law countries tend to have stronger investor protection laws, especially rules prohibiting self-dealing by corporate insiders.[189] To gauge whether this is also true for insider trading laws and enforcement, Illustration 5 computes t-test statistics that indicate whether the average values of the insider trading law and enforcement measures differ significantly between the civil and common law countries in the sample.

As Illustration 5 shows, for the full sample, the overall average of the aggregate insider trading law index, *IT Law*, is 2.73. The average value of *IT Law* is 2.91 for the common law countries and 2.64 for the civil law countries, but this result is not statistically significant. Looking at the components of this index, we see the average scope of insider trading bans (*Scope*) is almost identical for the two groups of countries, but there is a small difference in mean sanction threat (common law *Sanction* = 1.18, while civil law *Sanction* = 0.86), which is significant at the 10% level. In other words, the common law countries are somewhat more likely to be able to impose criminal sanctions and/or multiple monetary penalties upon those who violate the country's insider trading

185. La Porta et al., *Law and Finance*, *supra* note 8.

186. In the regressions below, I report results using only *Disclosure*. The results do not differ if I use *Accounting* rather than *Disclosure*.

187. The average year of enactment for the countries in the sample is 1983, which suggests that insider trading regulation is a relatively recent phenomenon. In fact, the majority of the countries in the sample did not have an insider trading law prior to 1988. The United States was the first country in the world to prohibit insider trading, with an effective prohibition occurring in 1961. The next country to prohibit insider trading was Canada, which enacted its insider trading law in 1966. The average year of the first enforcement is 1989, roughly six years after the average year of enactment.

188. Djankov et al., *Self-Dealing*, *supra* note 8; La Porta et al., *Law and Finance*, *supra* note 8, at 1130-31; La Porta et al., *Legal Determinants*, *supra* note 8, at 1138-39; La Porta et al., *What Works?*, *supra* note 8, at 15-16.

189. *See* sources cited *supra* note 188.

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laws than are the civil law countries, suggesting somewhat greater deterrence in common law countries. This difference is, however, attributable to the fact that four civil law countries and zero common law countries have insider trading laws with none of the measured sanctions. The large majority of the civil law countries have sanction threats like those of the common law countries. Thus, it would be a mistake to conclude that civil law origin necessarily implies that the sanctions attaching to insider trading laws will be weaker than those in common law countries. There is a similarly small, and in this case statistically insignificant, difference in the fractions of civil and common law countries that had enforced their insider trading laws by 1994.

Turning to enforcement power, a different picture emerges. The average value of *Public (or Regulatory) Enforcement Power* is 0.69 for the common law countries and 0.41 for the civil law countries, a difference that is statistically significant at the 1% level. The average value of *Private (Investor) Enforcement Power* is 5.73 for the common law countries and 1.44 for the civil law countries, which is also significant at the 1% level. Thus, despite substantial similarity in the formal dimensions of insider trading laws, we find, consistent with the work of Professors La Porta et al., that investors in common law countries can expect somewhat greater protection against insider trading (and other securities law violations) than investors in civil law countries.[190]

Illustration 6 reports the averages, medians and standard deviations of the variables that will be used in our analyses, both overall and by common law and civil law origin. Interestingly, the average values of the three dependent variables, ownership dispersion, stock price synchronicity, and average stock market turnover do not differ significantly between the common law and civil law countries of the sample. There is similarly no difference between common law and civil law countries on our two measures of economic well-being (average wealth and average economic growth). However, the other three control variables, anti-director rights, disclosure rules, and accounting standards do tend to be more stringent for the common law countries in my sample than for the civil law countries.[191]

Illustration 7 presents the pair wise correlation coefficients among the variables that are relevant to an empirical assessment of Hypotheses 1-3 (H1-H3); i.e., the dependent variables, outside ownership, stock price synchronicity, and average stock market turnover, and the insider trading law and enforcement measures. H1 predicts that countries with more restrictive insider trading laws have greater ownership dispersion, other things equal. Consistent with H1, Illustration 7 indicates that ownership dispersion is positively and significantly correlated with the aggregate *IT Law* index, the sub-index *Sanction*, and *Enforced by 1994*. The correlation coefficients range between 0.41 for *IT Law* and 0.53 for *Sanction*. These correlations are not huge, but neither are they tiny. In contrast, ownership dispersion is not significantly correlated with the *Scope* sub-component of *IT Law* or with either of the enforcement power variables, *Public Enforcement Power* or *Private Enforcement Power*. The three insignificant coefficients

190. La Porta et al., *Law and Finance*, *supra* note 8; La Porta et al., *Legal Determinants*, *supra* note 8.

191. The similarity of the dependent variables between common law and civil law countries is not what the work of La Porta et al. would lead one to expect. The significant difference on the three control variables is consistent with their results. La Porta et al., *Law and Finance*, *supra* note 8; La Porta et al., *Legal Determinants*, *supra* note 8.

are, however, of the predicted (positive) sign. Illustration 1 presents average ownership concentration graphed against *IT Law* and indicates that average ownership concentration steadily declines as *IT Law* increases, consistent with H1.

H2 predicts that stock prices are more informative, in that they contain a higher degree of firm-specific information, when insider trading laws are more stringent. The implication is that stock prices should be less synchronous (i.e., move together to a lesser extent) in countries with stricter insider trading laws and enforcement. Thus, a negative correlation between stock price synchronicity and the various insider trading law and enforcement measures is expected.[192] Consistent with H2, Illustration 7 shows that stock price synchronicity is negatively and significantly correlated with the aggregate *IT Law* index and with its sub-indices *Sanction* and *Scope*. However, stock price synchronicity is not significantly correlated with any of the enforcement measures, *Enforced by 1994*, *Public Enforcement Power* or *Private Enforcement Power*, although these coefficients are all of the expected (negative) sign. Illustration 2 plots average stock price synchronicity against *IT Law* and shows, consistent with H2, albeit weakly, that average stock price synchronicity is higher in countries with lower *IT Law* values.

Finally, H3 predicts that stock markets are more liquid in countries that have more restrictive insider trading laws. In Illustration 7, we see that average stock market turnover, a proxy for stock market liquidity, is positively and significantly correlated with the sub-index *Scope*. However, average stock market turnover is not significantly correlated with *Sanction*, the aggregate *IT Law* index, or with any of the three enforcement measures, *Enforced by 1994*, *Public Enforcement Power* and *Private Enforcement Power*. Moreover, the correlations between the latter two enforcement variables and average stock market turnover are, contrary to H3, negative. Illustration 3 plots average stock market turnover against *IT Law* and shows that average stock market turnover is greater in countries with higher *IT Law* values, consistent with H3.

Illustration 7 also reveals other relationships of interest, although they are not directly relevant to H1-H3. In particular, it appears that countries whose formal insider trading laws penalize insider trading more harshly, in the form of criminal or monetary penalties, tend to allocate greater enforcement powers to both public and private enforcers *and* are more likely to have actually enforced their insider trading laws by 1994. The correlation coefficients between *IT Law* and *Enforced by 1994*, *Public Enforcement Power* and *Private Enforcement Power*, respectively, are positive and significant at the 10% level or above. Likewise, the correlation coefficients between the *IT Law* sub-index *Sanction* and *Enforced by 1994*, *Public Enforcement Power* and *Private Enforcement Power*, respectively, are positive and significant at the 10% level or above. Furthermore, countries that allocate greater public enforcement power also tend to have greater private enforcement potential. The correlation coefficient between *Public Enforcement Power* and *Private Enforcement Power* is 0.33 and is significant at the 10% level in Illustration 7.

Finally, although Table 4 does not report correlations between the level of economic development and the various dependent variables and insider trading law and enforcement measures, they are noteworthy. The wealthier economies (where wealth is

192. H2 predicts a negative correlation between the stringency of insider trading laws and synchronicity because lower synchronicity implies that stock prices are more informative. *See* illustration *supra* p. 262.

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measured by the log of GDP per capita) in the sample have significantly larger stock markets (as measured by stock market capitalization). The wealthier countries also have more diffuse equity ownership; the correlation between the log of GDP per capita and outside ownership is 0.35 and is significant at the 5% level. In addition, the correlation coefficient between stock price synchronicity and the log of GNP is -0.44 and is significant at the 1% level, which means that stock prices tend to reflect more firm-specific information in wealthier countries. In contrast, the wealthier countries in the sample do not have significantly more liquid stock markets. Finally, the richer countries have significantly more stringent insider trading laws by all three measures (*Scope*, *Sanction*, and *IT Law*) and are more likely to have enforced those laws by 1994.[193] For these reasons, we cannot consider H1-H3 supported without conducting a more controlled analysis, and in the regressions below I control for wealth (log of GDP per capita) and various additional variables.

V. REGRESSION ANALYSIS OF INSIDER TRADING LAW AND THE STOCK MARKET

Although the empirical results presented in Part IV.B are generally consistent with the predictions of H1-H3, those results present only a partial story, for they do not control for factors, other than the insider trading laws, which might explain the dependent variables. It may be, for example, that if we looked at two countries with identical wealth and accounting rules, the relationships between more stringent insider trading bans and stock market characteristics would disappear (i.e., become statistically insignificant) or even reverse (i.e., be significant but in the opposite direction of the Illustration 7 results).

Multivariable regression analysis is a way of controlling for this possibility.[194] The multivariable regression model we shall use is

$$Y = B_O + B_N X_N + B_M X_M + e$$

where Y is the dependent variable of interest, X_N represents the various independent variables (i.e., measures of insider trading laws and their enforcement) and X_M represents the various control variables. In the regressions below, I consider a coefficient to be statistically significant if it is at least significant at the 10% level.

A. Insider Trading Law and Corporate Ownership

H1 predicts that countries with more stringent insider trading laws have more dispersed equity ownership. Due to limited data availability on corporate ownership patterns across countries, I test this hypothesis using the degree of ownership dispersion in a country's ten largest non-financial firms as the dependent variable in several different multivariable regression models. The independent variables in these regressions are measures of insider trading laws and enforcement. The insider trading law variables,

193. However, public and private enforcement measures are not greater for the wealthier countries and, in fact, *Public Enforcement Power* is, paradoxically, negatively correlated with the log of GDP per capita at the 5% level of significance.

194. Multiple regression is by now so familiar in the law review literature that I shall not explain it. The reader who wants to learn more about this statistical technique may wish to consult Daniel L. Rubinfeld, *Reference Guide on Multiple Regression, in* REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 179-227 (2d ed. 2000), *available at* http://air.fjc.gov/public/pdf.nsf/lookup/sciman00.pdf$file/sciman00.pdf.

Scope and *Sanction*, are centered about their means to address multicollinearity. I also include an interaction term, *Scope*Sanction*, which is the product of (mean-centered) *Scope* and (mean-centered) *Sanction*. The control variables include disclosure quality, legal origin, an index of anti-director rights, the log of GDP per capita, and the growth of GDP per capita.

Illustration 8 reports three regression models for ownership dispersion. In Model 1, the coefficient on *Scope* is positive, which is consistent with H1, but it is not statistically significant. Thus, we cannot conclude on the basis of Model 1 that the scope of the insider trading prohibition is associated with wider ownership dispersion. In contrast, in Model 1, the coefficient on *Sanction* is 0.15 and it is statistically significant at the 1% level and of the predicted sign, suggesting that stiffer sanctions for insider trading are associated with less concentrated equity ownership, at least in a country's ten largest non-financial firms. In Model 1, the coefficients on the control variables are all insignificant.[195]

Model 1 looks only at the law on the books. If the law has not been enforced or has been enforced only recently, regardless of what the law stipulates, it may have had little influence on behavior.[196] Ideally, we would be able to measure the activities of the agencies charged with enforcing insider trading laws, but I was unable to acquire such measures for all the countries in my sample. The only measure currently available is the relatively crude measure of whether a country's insider trading law is a mere formality, as indexed by whether the law was ever enforced by 1994. Thus Model 2 adds the variable, *Enforced by 1994* (described above), to the control variables of Model 1.

195. In regressions that I do not report in the Article, I regress ownership dispersion on the alternative disclosure measures and the control variables, excluding the insider trading law indices. The coefficient on *Disclosure* is positive and significant at the five-percent level. This result is consistent with what La Porta et al. found. La Porta et al., *What Works?*, *supra* note 8, at 16. In contrast, although the coefficient on *Accounting* is also positive, it is insignificant. The finding of this Article that the relationship between insider trading laws and the dependent variables is generally stronger than the relationship between the dependent variables and disclosure is consistent with the finding of another empirical study that disclosure is of secondary importance to the legal rules protecting investors. Francis et al., *supra* note 182. *But see* Djankov et al., *Self-Dealing*, *supra* note 8 (finding that disclosure rules are positively associated with stock market development across countries); La Porta et al., *What Works?*, *supra* note 8 (same).

196. In discussing the limitations of the laws on the books as predictors of financial market development in transition economies, Professors Gelfer, Pistor, and Raiser stress:

> For the law on the books to affect financial market development . . . law enforcement must be *credible*. Past experience with legal reforms suggests that where new laws were forced upon a judicial system unfamiliar with the underlying legal tradition and were not adapted to fit the specific local context, the effectiveness of the law suffered . . . . Trust in the law remained low and reliable enforcement by the state's legal institutions could not be guaranteed . . . . *[T]he quality of law enforcement is at least of equal importance to the extensiveness of the law*.

Stanislaw Gelfer et al., *Law and Finance in Transition Economies*, 8 ECON. OF TRANSITION 325, 328 (2000) (emphasis added). In their empirical investigation, Gelfer et al. find that the effectiveness of legal institutions is more important to the development of financial markets in transition economies than the formal written laws. *Id.* at 351-55. Thus, it is necessary to consider not only countries' formal written laws but also the characteristics of the institutional environment that pertain to the credibility of such laws. In the present context, the relevant inquiry is twofold: (1) whether a country has an established history of enforcing its insider-trading law and (2) insider trading enforcement history aside, the quality of the available mechanisms for enforcement of the country's insider trading and securities laws.

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We see from Model 2 in Illustration 8 that a history of enforcement has effects consistent with H1, for the coefficient on *Enforced by 1994* is positive, as predicted, and significant. Including this variable in the ownership dispersion regression does not dampen the effect of the *Sanction* measure of insider trading law. Rather, the magnitude and significance of the coefficient on *Sanction* is the same in Models 1 and 2. Moreover, Model 2 explains a greater proportion of the variance of ownership dispersion among large firms than Model 1 explains (R^2 increases from 58% to 65% between Model 1 and Model 2).

Finally, Model 3 adds controls for two potential enforcement measures, *Public Enforcement Power* and *Private Enforcement Power*.[197] These variables have somewhat different meanings. *Public Enforcement Power* relates to the independence and authority of the stock market supervisory official(s) and is not limited to the authority to proceed against insider trading violations. Hence, it may be seen as an indicator of the general regulatory climate regarding financial markets. The *Private Enforcement Power* variable reflects the capacity of private parties to seek redress for violations of insider trading laws—hence it can be seen both as an aspect of the stringency of the insider trading regulatory regime and as a more general indicator of the seriousness with which insider trading violations are taken by the country's lawmakers. We see from Model 3 in Illustration 8 that controlling for *Private Enforcement Power* and *Public Enforcement Power* does not fundamentally change the results of Models 1 and 2. However, Model 3 does slightly increase the proportion of variance explained relative to Model 2. The results in Illustration 8 are robust to dropping one country at a time from each regression; that is, no single country drives the results.

To summarize, the regressions in Illustration 8 suggest that outside ownership in a country's largest non-financial firms is positively related to the existence of criminal or monetary sanctions for violating the country's insider trading laws, other things equal. If such a relationship exists, it is not trivial. For instance, Model 3 suggests that a 0.32 point increase in the *Sanction* score is associated with about a 5 percentage point increase in average ownership dispersion.[198] This 5 percentage point increase is approximately the difference in average ownership concentration between common law (59%) and civil law countries (54%) and about 9% of the average ownership dispersion for the sample. This finding is consistent with H1 and suggests that a country's largest public corporations tend to have greater ownership dispersion where insider trading laws are enforceable through civil, criminal, or civil and criminal sanctions and, conversely, it appears that ownership concentration is greater in countries whose insider trading laws include weaker sanctions for insider trading violations.

B. Insider Trading Law and Stock Price Informativeness

H2 predicts that stock prices are more informative in countries that have more

197. As a brief reminder, recall that the variable *Public Enforcement Power* is the arithmetic mean of an index of the securities market supervisor's characteristics and an index of the securities market supervisor's investigative powers, and *Private Enforcement Power* is the product of the existence of a private right of action pursuant to a country's insider trading law and the efficiency of the judiciary. *See infra* Illustration 4.

198. The difference in the average value of *Sanction* between the common law and civil law countries in my sample is 0.32. *See infra* Illustration 5.

stringent insider trading laws. Lower synchronicity implies more informative stock prices for reasons explained above. Thus, H2 predicts negative coefficients on the insider trading law variables in regressions where stock price synchronicity is the dependent variable. Illustration 9 reports three regressions that test this hypothesis. Models 1 through 3 in Illustration 9 include the same independent and control variables as the three corresponding regressions for ownership dispersion reported in Illustration 8.

As with ownership dispersion, Model 1 of Illustration 9 shows that the coefficients on *Scope* and the interaction term, *Scope*Sanction*, are statistically insignificant, although they are negative as predicted by H2. Model 1 also shows that the coefficient on *Sanction* is negative (-5.39), and it is significant at the 1% level. This result is consistent with H2 and suggests that more stringent insider trading laws are associated with more informative (i.e., less synchronous) stock prices. The availability of civil, criminal, or criminal and civil sanctions again appears to be driving the relationship. That is, stock prices appear to be more informative about firm-specific developments in the sample countries in which those who violate the country's insider trading laws face greater potential criminal and monetary sanctions. Models 2 and 3 in Illustration 9 control for various aspects of the enforcement environment that might be driving this result, since *Sanction* is positively and significantly correlated with the enforcement variables (as demonstrated in Illustration 7).

Model 2 adds the control variable *Enforced by 1994* to the regressors in Model 1. The coefficient on *Enforced by 1994* is insignificant, but it is in the direction (negative) predicted by H2. Importantly, controlling for enforcement history does not dampen the relationship between the *Sanction* index and stock price synchronicity relative to Model 1. Rather, the coefficient on *Sanction* increases in absolute magnitude, and it remains significant at the 1% level. The coefficient on Model 2 also explains a greater proportion of the variance in stock price synchronicity relative to Model 1.

Model 3 adds to Model 2 the two additional enforcement measures, *Public Enforcement Power* and *Private Enforcement Power*.[199] Model 3, reported in Illustration 9, indicates that the coefficient on *Public Enforcement Power* is negative and significant at the 1% level. This result implies that countries whose securities regulatory authorities have greater enforcement power have more informative stock prices, other things equal. Model 3 also shows that controlling for *Private Enforcement Power* and *Public Enforcement Power* does not change the basic results relative to Models 1 and 2. Although the absolute magnitude of the coefficient on *Sanction* falls somewhat in Model 3, it is still significant at the 1% level as in Models 1 and 2. Also, the coefficient on the interaction term, *Scope*Sanction*, becomes significant at the 10% level in Model 3. In addition, Model 3 does not change the magnitude or significance of the coefficient on *Enforced by 1994* relative to Model 2. Finally, Model 3 increases the proportion of variance explained relative to Models 1 and 2. The results in Illustration 9 are robust to dropping one country at a time from each regression; that is, no single country is driving the results.

In summary, the regressions in Illustration 9 suggest that, other things equal, stock prices are less synchronous (presumably more informative) in countries with greater potential criminal or monetary sanctions for insider trading law violations. To concretize

199. See *infra* Illustration 4 for an explanation of the meaning of these enforcement measures.

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this basic result, Model 3 in Illustration 9 suggests that a 0.32 point increase in the *Sanction* score is associated with roughly a 1.7 percentage point decrease in average stock price synchronicity, or slightly more than twice the difference in average stock price synchronicity between civil law countries (66.52%) and common law countries (65.76%) and about 2.6% of average stock price synchronicity for the full sample (66.25%). Also note that Models 1-3 suggest that stock prices are more synchronous (less informative) in civil law countries than in common law countries (the omitted dummy variable).[200]

C. Insider Trading Law and Stock Market Liquidity

H3 predicts that stock markets are more liquid in countries that have more stringent insider trading laws for the reasons given above. Thus, H3 predicts positive coefficients on the insider trading law variables in regressions where stock market turnover is the dependent variable. Illustration 10 reports three regressions that test this hypothesis; the dependent variable is the log of the average stock market turnover between 1991 and 1995. The regressions in Illustration 10 include the same independent and control variables as in Illustrations 8 and 9 for ownership dispersion and stock price synchronicity, respectively.

In Model 1, the coefficient on *Scope* is positive as predicted by H3; however, it is only marginally significant at the 11% level. The coefficient on *Sanction* in Model 1 is positive, consistent with H3, but it is statistically insignificant. In contrast, the coefficient on the interaction between (mean-centered) *Scope* and (mean-centered) *Sanction* is positive and significant at the 1% level in Model 1. This result is consistent with H3 and suggests that simultaneously broader and more punitive insider trading laws are associated with greater stock market liquidity.

Model 2 in Illustration 10 supplements Model 1 by controlling for *Enforced by 1994*. The coefficient on *Enforced by 1994* is insignificant, but it is positive as predicted by H3. Note that controlling for past enforcement in this manner does not affect the relationship between average stock market turnover and the interaction between (mean-centered) *Scope* and (mean-centered) *Sanction*. In addition, Model 2 explains a greater proportion of the variance in average stock market turnover relative to Model 1.

Model 3 adds the two potential enforcement measures, *Public Enforcement Power* and *Private Enforcement Power* to the control variables in Model 2.[201] Neither of these variables is statistically significant in Model 3. However, in Model 3 the coefficient on the interaction between (mean-centered) *Scope* and (mean-centered) *Sanction* increases in magnitude relative to both Models 1 and 2 and in statistical significance relative to Model 2. In addition, Model 3 increases the proportion of variance explained relative to Models 1 and 2.[202]

200. In regressions that I do not report in the Article, I regress stock price synchronicity on the alternative disclosure measures and the control variables, without the insider trading law indices. The coefficient on *Disclosure* is positive but insignificant, while the coefficient on *Accounting* is positive and significant at the 5% level.

201. See *infra* Illustration 4 for an explanation of the meaning of these enforcement measures.

202. In regressions that I do not report in the Article, I regress stock market turnover on each of the alternative disclosure quality measures and the other control variables, excluding the insider trading law

To summarize, the results in Illustration 10 are consistent with H3, which posits that countries with more prohibitive insider trading laws have more liquid stock markets, other things equal. However, the results in Illustration 10 are somewhat sensitive to the inclusion of particular countries in the regressions, so they must be interpreted with caution. The small size of my sample might explain why the results in Illustration 10 are sensitive to particular countries.[203] Using a much larger time series for 103 countries, Professors Bhattacharya and Daouk find that stock market liquidity does indeed tend to increase after a country first enacts insider trading regulation. This provides some consolation that my results regarding stock market liquidity are not spurious.

D. Interaction of Sanctions and Public Enforcement Power

There is sound reason to expect that both insider trading laws and public enforcement mechanisms affect investors' expectations and hence stock market performance.[204] However, in the regressions above, with the exception of ownership (see Model 3 in Illustration 8), the coefficients on these separate variables are never simultaneously significant. A potential reason for this is multicollinearity between the insider trading law variables and *Public Enforcement Power* (see Illustration 7). I thus pursue a common approach to multicollinearity, which is to combine collinear variables into a single variable in light of their inseparable influence on the dependent variable. I create a new variable, *Public Enforcement Power*Sanction*, which is the product of *Public Enforcement Power* and *Sanction*. I then run the regressions for each of the three dependent variables using this new variable, *Public Enforcement Power*Sanction*.

Illustration 11 reports the results. Columns 1, 3, and 5 present regressions in which the insider trading law variables are *Scope* and *Public Enforcement Power*Sanction* for the dependent variables ownership, synchronicity, and liquidity, respectively. The results are consistent with H1-H3. In particular, the coefficient on *Public Enforcement Power*Sanction* is of the predicted sign and is statistically significant in each of the regressions in columns 1, 3, and 5. Regressions 1, 3 and 5 in Illustration 11 are also robust to dropping one country at a time; that is, no single country dominates the results. However, note the relatively low *R-squared* statistics of regressions 1, 3, and 5 relative to Model 3 in Illustrations 8, 9, and 10, respectively. Thus, I also report the regressions in columns 2, 4, and 6 of Illustration 11. The latter regressions constitute Model 4 for each of the dependent variables, since they simply add the variable *Public Enforcement Power*Sanction* to Model 3 for each dependent variable. In contrast to the results in columns 1, 3, 5, in columns 2, 4, and 6 (Model 4), the coefficients on *Public Enforcement Power*Sanction* are insignificant. This might be due to multicollinearity among the independent variables, even though in columns 2, 4, and 6, all of the insider trading law variables and *Public Enforcement Power* are centered about their means to mitigate the effect of multicollinearity. Nevertheless, the results in columns 2, 4, and 6 are still largely consistent with H1, H2, and H3, respectively.

variables. The coefficients on *Disclosure* and *Accounting* are both positive but insignificant.

203. Bhattacharya & Daouk, *supra* note 72. Unlike this study, though, their study does not distinguish countries by the stringency of their insider trading laws.

204. Ackerman & Maug note:

> market participants anticipate future enforcement actions by regulatory authorities [and] this effect is concentrated in countries with high quality legal systems [where] investors change their behavior after insider trading laws have been enacted and . . . before they have been enforced [while i]n countries with less effective legal systems laws may have no impact as investors anticipate that they will not be enforced.

Ackerman & Maug, *supra* note 162, at 2-3.

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E. Summary and Discussion of Results

The regression analyses yield three basic results. The first result is that a country's large public corporations tend to have less concentrated ownership, where concentration is defined as the proportion of a company's stock held by the company's three largest shareholders, when a country has tougher insider trading laws and enforcement. This finding is consistent with H1. The availability of criminal or monetary sanctions for violating the insider trading laws and a willingness to enforce them seem particularly important. Since concentrated ownership is a mechanism for addressing agency problems and because outside investors are reluctant to invest when agency costs are high, this result supports theories that see insider trading as an agency cost. However, the result is also consistent with the view that insider trading reduces agency costs, meaning that ownership concentration may be endogenous to insider trading. Thus, the first set of models we examined (in Illustration 8) provide only a weak test of the implications of prohibitions against insider trading because our ownership dispersion measure is limited to ten companies per country and the results are indeterminate in any event.[205] Nevertheless, the failure to find that more stringent insider trading laws are associated with greater ownership concentration is some evidence that prohibiting insider trading does not have one kind of detrimental effect that might occur if the laws were counterproductive. Moreover, the ownership results suggest that countries that wish to encourage more widespread equity ownership might want to consider strengthening their insider trading laws.

The results of the second set of regression models (Illustration 9) indicate that stock prices tend to be less synchronous (i.e., contain more firm-specific information) in countries with more stringent insider trading laws, consistent with H2. This finding is consistent with the claim that insider trading undermines stock price accuracy because it discourages arbitrage traders by increasing the risk of expropriation and/or by stifling

205. See *supra* Part III for a review of the conflicting accounts of Professors Demsetz and Bhide, on the one hand, and Professor Maug, on the other hand, regarding the impact of insider trading on agency costs. In another study, I conduct a more direct test of the agency cost implications of insider trading laws by examining the relationship between insider trading laws at the country-level and corporate valuation at the firm level. Laura Beny, Do Shareholders Value Insider Trading Laws? International Evidence (August 2006) (unpublished manuscript, on file with author), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=296111. In that study, I find a positive and statistically significant relationship between corporate valuation and insider trading law and enforcement among firms in common law countries but not among firms in civil law countries. *Id*. Judge Easterbrook suggests a few additional tests of the agency implications of insider trading, including investigation of the empirical "relation between insiders' trading and other forms of compensation;" "substitution between insider trading and other agency-cost control devices;" and various tests of the stock market's reaction to changes in insider trading regulation or to firm-specific incidences of prosecution for insider trading violations. Easterbrook, *supra* note 12, at 96-97. However, Judge Easterbrook notes that "even with data the [agency question] may be insoluble." *Id.* at 97.

competition in the market for information, and/or it increases insiders' incentives to manipulate information disclosure. These results are not what one would expect if the claim of opponents of insider trading legislation that insider trading is an effective and less costly alternative to traditional disclosure were true.

The results from the third set of models indicate that countries with tougher insider trading laws tend to have more liquid stock markets, consistent with H3. Support for H3 is consistent with theoretical and empirical research in market microstructure that finds a detrimental effect of information asymmetry on trading costs and with the notion that allowing insiders to trade on information known only to them harms liquidity (increases transaction costs) by reducing competition among informed traders. The results therefore support those who advocate insider trading regulation on the ground that it promotes liquid stock markets.

All three basic results are robust to controlling for the enforcement environment. Furthermore, the regressions strongly suggest that the possibility of stringent criminal or monetary sanctions, rather than the breadth of the prohibition, is the more salient feature of countries' insider trading laws. Sanctions are more frequently significant than the scope of the insider trading prohibition in the regressions reported in this Article.

VI. CONCLUSION AND IMPLICATIONS FOR THE THEORETICAL LAW AND ECONOMICS DEBATE

This Article began by summarizing the longstanding and unresolved theoretical law and economics debate about the efficiency implications of insider trading, reviewing some of the most prominent agency and market theories of insider trading on both sides of the debate. Next, the Article presented the equally perennial debate about whether insider trading ought to be regulated or left to private contracting. The main contribution of this Article, however, is that it moves the law and economics debate away from the purely theoretical to the empirical realm. In doing so, it provides some evidence that seems to favor proponents of insider trading regulation and enforcement. Recent empirical studies of insider trading laws seem to point in the same direction.[206]

The results are consistent with (but do not prove) the claim that insider trading laws generate positive market externalities. In particular, the findings that such laws are

206. *See, e.g.*, Bhattacharya & Daouk, *supra* note 72 (finding that stock market liquidity increases after the enactment of insider trading laws and the cost of equity falls significantly after a country prosecutes its insider trading law for the first time); Bushman et al., *supra* note 77 (finding that analyst following increases after countries' initial enforcement of insider trading laws, where analyst activity is assumed to be beneficial to stock market efficiency); Herrington, *supra* note 151 (confirming the findings in this Article, using more recent country data and insider trading law indices that are based upon and extend my indices). For recent evidence that is more ambiguous about the benefits of insider trading law and regulation, see Beny, *supra* note 205 (finding that more stringent insider trading laws are associated with greater corporate valuation in common law countries, but lower corporate valuation in civil law countries); Bris, *supra* note 162 (finding that insider trading profits prior to tender offer announcements decrease in the stringency of the law, but increase after the first enforcement); Art Durnev & Amrita Nain, The Effectiveness of Insider Trading Regulation Around the Globe (unpublished manuscript, on file with the author) (2005), *available at* http://ssrn.com/abstract=682281 (finding that insider trading laws may have perverse effects in civil law countries). None of the recent evidence supports any firm policy prescription, however, since evidence about the costs of insider trading regulation and enforcement is not available yet. *See infra* note 212.

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associated with more liquid stock markets and more informative stock prices support those who oppose private contracting on the ground that insider trading has external effects on the stock market. More liquid stock markets and more accurate stock prices reduce the overall cost of equity capital[207] and improve the efficiency of capital allocation,[208] respectively. Private parties are unlikely to give adequate consideration to these external benefits in their private negotiations. Thus, these two findings bolster the case for public regulation and correspondingly weaken the case for a "Coasian" approach to insider trading.[209] Furthermore, to the extent that insider trading regulation promotes more accurate stock prices and greater stock market liquidity, regulation might indirectly ameliorate corporate agency problems, as more accurate stock prices and greater liquidity facilitate improved corporate governance and the market for corporate control.[210] In contrast, less accurate prices and lower liquidity reduce shareholders' incentives to monitor and hence increase corporate insiders' ability and incentives to expropriate outside investors.[211] Thus, enacting or strengthening insider trading laws and their enforcement is something that countries interested in increasing the viability of their stock markets might consider.[212]

It is premature, however, to claim that such a strategy will surely succeed or that the debate between proponents and opponents of insider trading laws has now been empirically resolved. The results of this study must be viewed cautiously for several reasons. One is the crude nature of the available variables. Ownership concentration ratios in a country's midsize and smaller firms might, for example, be very different from what they are in a relatively small number of the country's very largest firms. And, we would like to know how regularly a country's insider trading laws have been enforced and not merely whether they have been enforced once before 1994.[213] Also, the sample

207. Amihud & Mendelson, *supra* note 40.

208. Wurgler, *supra* note 40.

209. *See* Cox, *supra* note 32; Goshen & Parchomovsky, *supra* note 39. *See generally* Glaeser et al., *supra* note 166.

210. The literature on mandatory securities disclosure enumerates several economic benefits of accurate stock prices, including their role in improving corporate governance and reducing agency costs. *See, e.g.*, Fox et al., *supra* note 40. In addition, using a mathematical model, Professor Maug shows that liquid stock markets are beneficial because they improve corporate governance by improving large shareholders' incentives to monitor. Ernst Maug, *Large Shareholders as Monitors: Is There a Trade-off Between Liquidity and Control?* 53 J. FIN. 65 (1998).

211. *See* Maug, *supra* note 210; Fox et al., *supra* note 40.

212. Even if strong insider trading laws and enforcement are associated with greater public participation in the stock market, more liquid stock markets, and more accurate stock prices, however, policymakers need to assess whether they are worth their costs. Such costs include the cost of legislative enactment and subsequent market supervision and enforcement and various additional direct and indirect costs of the regulatory scheme. *See, e.g.*, Howell E. Jackson, *Variation in the Intensity of Financial Regulation: Preliminary Evidence and Potential Implications* (John M. Olin Ctr. for Law, Econ., and Bus., Working Paper No. 521, 2005), *available at* http://ssrn.com/sbstract=839250 (discussing the direct and indirect costs of financial regulation). So far, there have been no empirical studies, much less comparative empirical studies, of the relative costs and benefits of insider trading regulation. *Id.* at 32 ("[W]e don't have evidence that the benefits of enforcing insider trading law exceeds the costs of enforcing those laws.").

213. Even if we knew the frequency of enforcement, there would be serious endogeneity problems because a country with the most effective insider trading regime might have occasion to engage in relatively low enforcement efforts precisely because the law is so restrictive. Ideally, we would be able to test a time series model.

of available countries is quite small and there may be differences between them in data reliability. It is also possible that some countries enacted insider trading laws merely in response to external pressure,[214] resulting in rote transplantation of foreign insider trading laws unrelated to such countries' financial, legal, and institutional characteristics.[215] It is some consolation that these concerns would ordinarily be expected to reduce the likelihood of finding significant relationships but they nonetheless caution against relying too heavily on these results. An additional concern is that the relationship between insider trading laws/enforcement and measures of stock market performance might be context and culture dependent. A relationship that holds across the sample as a whole may not hold for a particular country with its own business traditions at a particular stage of economic development.

Finally, although this Article's empirical results demonstrate a significant relationship between insider trading laws and various measures of stock market performance, they do not prove causality. More developed stock markets may simply have stronger insider trading laws and enforcement because they have the necessary influential constituencies to demand a tough approach to insider trading. The public choice claim that certain stakeholders in the financial system cause insider trading laws to be adopted suggests that causality might run from the financial system to insider trading laws, rather than the reverse.[216]

The appropriate conclusion to reach from this research is not that the arguments of proponents of insider trading regulation have been *proven* sounder than the arguments of those who criticize such regulation, but rather that there is somewhat more reason to believe in their soundness than there was before this study was conducted. While I would like to be able to reach a stronger conclusion, it is essential to avoid the undue confidence, combined with an inordinate haste to make policy recommendations that too often have characterized the insider trading debate. If we err at all, we should err on the side of excessive care in assessing what we know, at least if our aim is to influence policy.

At the same time, I do not want to sell short what I think we can learn from the

214. *See* Haddock & Macey, *Controlling Insider Trading*, *supra* note 77.

215. *See generally* Katharina Pistor, *The Standardization of Law and Its Effect on Developing Economies*, 50 AM. J. COMP. L. 97 (2002) (noting difficulties in adopting standard laws to domestic legal cultures in developing countries). This suggests that careful study of the political economy of countries' (especially emerging markets') adoption of insider trading laws is desirable. For a start, see Laura N. Beny, *The Political Economy of Insider Trading Legislation and Enforcement: International Evidence* (John M. Olin Ctr. for Law, Econ., and Bus., Working Paper No. 348, 2002), *available at* http://ssrn.com/abstract=304383. In addition, I have conducted a survey of stock market regulators and stock market exchanges around the world about the motivating circumstances of their countries' adoption and initial enforcement of insider trading laws. The results of my analysis of these data will be available shortly (contact author for details).

216. *See, e.g.*, Haddock & Macey, *Regulation on Demand*, *supra* note 77 (arguing that insider trading laws are adopted for political reasons, not necessarily to improve efficiency); *see also* Beny, *supra* note 215; *see also* Haddock & Macey, *supra* note 74, at 1451 ("While the SEC's present rules banning insider trading may well be supportable under certain theoretical conditions, the SEC's refusal to permit firms to opt out of its rules suggests to us that the ban is motivated by political rent seeking rather than a quest for economic efficiency."). *See generally* Coffee, *Rise of Dispersed Ownership*, *supra* note 8, at 81 (noting that in several countries, securities "law appears to be responding to changes in the market [i.e., the emergence of influential investor constituencies], not consciously leading it").

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analysis in this Article. Substantively, the consistent support for the hypotheses that favor the regulation of insider trading at a minimum places on those who advocate the deregulation of insider trading the burden of presenting persuasive empirical evidence that refutes this Article's findings (and the findings of other recent studies) and/or supports the deregulatory position. My results also suggest that the assumptions made by theorists who see on balance benefits to insider trading regulation are closer to the mark than the assumptions that undergird the conclusions of those who oppose such regulation. In particular, many scholars acknowledge that the "pure" Coasian assumptions are unrealistic. It appears that their unreality might matter in some contexts, including the present context, i.e., the insider trading debate.

Methodologically, this Article suggests that cross-country data and a comparative analysis can shed empirical light on the implications of regulatory regimes that frustrate single country investigation due to insufficient variance. Undoubtedly there is a need for further empirical research on this issue, including the assembly of more adequate cross-sectional and time series data sets. This Article is but an early step. It can help resolve the theoretical conflict (and perhaps contribute to the articulation of a more coherent insider trading doctrine in the United States) only if consistent empirical work follows.

ILLUSTRATION 1: AVERAGE OWNERSHIP CONCENTRATION PLOTTED AGAINST *IT LAW*

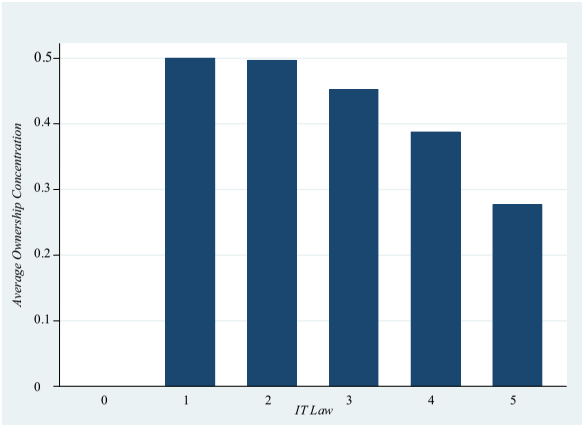

ILLUSTRATION 2: AVERAGE STOCK PRICE SYNCHRONICITY PLOTTED AGAINST *IT LAW*

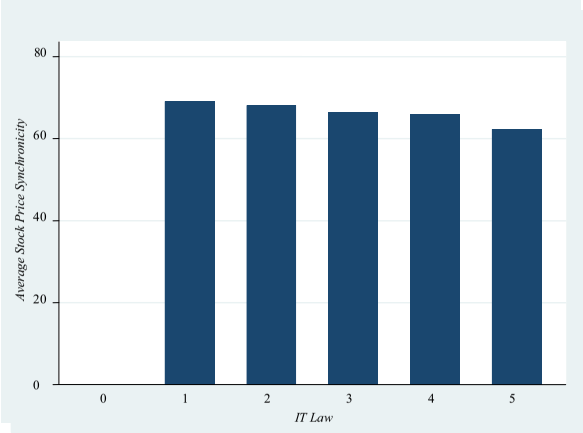

ILLUSTRATION 3: AVERAGE STOCK MARKET TURNOVER (1991-1995) PLOTTED AGAINST *IT LAW*

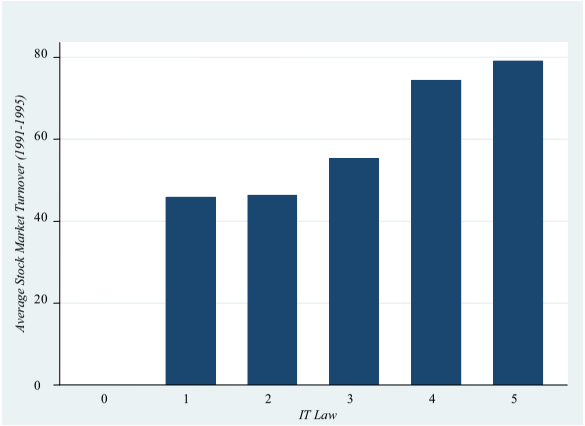

ILLUSTRATION 4: DESCRIPTION OF THE VARIABLES

	Description
	Dependent Variables
Ownership Dispersion	One minus the average fraction of common stock of the ten largest non-financial domestic firms owned by the three largest shareholders in the country. La Porta et al., *Law and Finance*, *supra* note 8, at 1125.
Average Stock Market Turnover	The total value traded divided by stock market capitalization, averaged across 1991-1995. EMERGING MARKETS FACTBOOK, *supra* note 149.
Stock Price Synchronicity	The fraction (%) of stocks whose prices moved in the same direction in an average week in 1995. Fox et al., *supra* note 40.
	Insider Trading Law Variables
Tipping	Tipping equals one if corporate insiders are prohibited from tipping outsiders (tippees) about material non-public information and/or encouraging them to trade on such information for personal gain; equals zero otherwise. INSIDER TRADING: THE LAWS OF EUROPE, THE UNITED STATES AND JAPAN, *supra* note 152; INTERNATIONAL INSIDER DEALING, *supra* note 152.
Tippee	Tippee equals one if tippees, like corporate insiders, are prohibited from trading on material non-public information that they have received from corporate insiders; equals zero otherwise. INSIDER TRADING: THE LAWS OF EUROPE, THE UNITED STATES AND JAPAN, *supra* note 152; INTERNATIONAL INSIDER DEALING, *supra* note 152.
Damages	Damages equals one if potential monetary penalties for violating insider trading laws are proportional to insiders' trading profits; equals zero otherwise. INSIDER TRADING: THE LAWS OF EUROPE, THE UNITED STATES AND JAPAN, *supra* note 152; INTERNATIONAL INSIDER DEALING, *supra* note 152.
Criminal	Criminal equals one if violation of insider trading laws is a potential criminal offense; equals zero otherwise. INSIDER TRADING: THE LAWS OF EUROPE, THE UNITED STATES AND JAPAN, *supra* note 152; INTERNATIONAL INSIDER DEALING, *supra* note 152.
Scope	Scope is a sub-index of insider trading law. Scope measures the breadth of the insider trading prohibition. It is the sum of Tipping and Tippee. Scope ranges from 0 to 2, with 0 representing the most permissive insider trading prohibition and 2 representing the most restrictive insider trading prohibition.
Sanction	Sanction is a sub-index of insider trading law. Sanction is a proxy for the expected criminal and monetary sanctions for violating a country's insider trading laws. It is the sum of Damages and Criminal. Sanction ranges from 0 to 2, with 0 representing the lowest expected sanctions and 2 representing the highest expected sanctions.

IT Law	The aggregate IT Law index equals the sum of (1) Tipping; (2) Tippee; (3) Damages; and (4) Criminal; or, equivalently, the sum of Scope and Sanction. IT Law ranges from 0 to 4, with 0 representing the most lax insider trading legal regime and 4 representing the most restrictive insider trading legal regime.
	Enforcement Variables
Enforced by 1994	A proxy for actual enforcement, "Enforced by 1994" is an indicator variable that equals one if the country's insider trading law has been enforced for the first time by the end of 1994. Bhattacharya & Daouk, *supra* note 72, tbl. 1 (this is the column that the authors have mistakenly labeled "IT Laws Existence" (column 8), rather than "IT Laws Enforcement").
Public Enforcement Power	The public enforcement index is the arithmetic mean of an index of the securities market supervisor's characteristics and an index of the securities market supervisor's investigative powers. The securities market supervisor's characteristics index equals the arithmetic mean of the four components: (1) Appointment—"[e]quals one if a majority of the members of the Supervisor are not unilaterally appointed by the Executive branch of government; and equals zero otherwise," La Porta et al., *What Works?*, *supra* note 8, at 7; (2) Tenure—"[e]quals one if members of the Supervisor cannot be dismissed at the will of the appointing authority; and equals zero otherwise," *id.*; (3) Focus—"[e]quals one if separate government agencies or official authorities are in charge of supervising commercial banks and stock exchanges; and equals zero otherwise," *id.*; (4) Rule-making authority— [e]quals one if the Supervisor can generally issue regulations regarding primary offerings and/or listing rules on stock exchanges without prior approval of other governmental authorities. Equals one half if the Supervisor can generally issue regulations regarding primary offerings and/or listing rules on stock exchanges only with the prior approval of other governmental authorities. Equals zero otherwise. *Id.* The supervisor's investigative powers index equals the arithmetic mean of two factors: (1) Document— [a]n index of the power of the Supervisor to command documents when investigating a violation of securities laws. Equals one if the Supervisor can generally issue an administrative order commanding all persons to turn over documents; equals one half if the Supervisor can generally issue an administrative order commanding publicly traded corporations and/or their directors to turn over documents; and equals zero otherwise *id.* at 8; (2) Witness— [a]n index of the power of the Supervisor to subpoena the testimony of witnesses when investigating a violation of securities laws. Equals one if the Supervisor can generally subpoena all persons to give testimony; equals one half if the Supervisor can generally subpoena the directors of publicly traded corporations to give testimony; and equals zero otherwise. La Porta et al., *What Works?*, *supra* note 8, at 8.
Private Right	Private right equals one if private parties have a private right of action against parties that have violated the country's insider trading laws. INSIDER TRADING: THE LAWS OF EUROPE, THE UNITED STATES AND JAPAN, *supra* note 152; INTERNATIONAL INSIDER DEALING, *supra* note 152.
Efficiency of the Judiciary	Efficiency of the judiciary is a measure of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms." La Porta et al., *Law and Finance*, *supra* note 8, at 1124. It is recorded as the arithmetic average between 1980 and 1983.
Private Enforcement Power	The product of Private Right and Efficiency of the Judiciary.
	Control Variables
Log of GDP	Logarithm of per capita gross domestic product in 1995, measured in constant 1995 U. S. dollars. World Bank, World Development Report CD-Rom (2003).
GDP Growth	Average annual percentage growth rate of per capita GDP for the years 1970-1993. World Bank, World Development Report (1995).
Anti-director Rights	Aggregate index of minority shareholder rights. The index is the sum of "(1) [ability to] vote by mail; (2) shares not blocked or deposited; (3) cumulative voting; (4) oppressed minority [rights]; (5) pre-emptive rights; and (6) capital [required to call a meeting]." Djankov et al., *Self-Dealing*, *supra* note 8, tbl. XI. The index ranges from zero to six, where six signifies the strongest anti-director rights.
Legal Origin	An indicator variable that signifies the legal origin of the country's Company Law or Commercial Code. Legal origin may be English common law, French civil law, German civil law or Scandinavian civil law. La Porta et al., *Law and Finance*, *supra* note 8.
Disclosure	The Disclosure index equals the arithmetic average of six separate indices of information that firms are legally required to include in their prospectuses: (1) Compensation; (2) Shareholders;

	(3) Inside Ownership; (4) Irregular contracts; (5) Transactions. La Porta et al., *What Works?*, *supra* note 8. (1) Compensation is [a]n index of prospectus disclosure requirements regarding the compensation of the Issuer's directors and key officers. Equals one if the law or the listing rules require that the compensation of each director and key officer be reported in the prospectus of a newly listed firm; equals one half if only the aggregate compensation of directors and key officers must be reported in the prospectus of a newly-listed firm; and equals zero when there is no requirement to disclose the compensation of directors and key officers in the prospectus for a newly listed firm. *Id.* at 6. (2) Shareholders are [a]n index of disclosure requirements regarding the Issuer's equity ownership structure. Equals one if the law or the listing rules require disclosing the name and ownership stake of each shareholder who, directly or indirectly, controls 10% or more of the Issuer's voting securities; equals one half if reporting requirements for the Issuer's 10% shareholders do not include indirect ownership or if only their aggregate ownership needs to be disclosed; and equals zero when the law does not require disclosing the name and ownership stake of the Issuer's 10% shareholders. [The index includes both] large shareholder reporting requirements imposed on firms and those imposed [directly] on large shareholders. *Id.* (3) Inside Ownership is [a]n index of prospectus disclosure requirements regarding the equity ownership of the Issuer's shares by its directors and key officers. Equals one if the law or the listing rules require that the ownership of the Issuer's shares by each of its directors and key officers be disclosed in the prospectus; equals one half if only the aggregate number of the Issuer's shares owned by its directors and key officers must be disclosed in the prospectus; and equals zero when the ownership of Issuer's shares by its directors and key officers need not be disclosed in the prospectus. *Id.* (4) Irregular contracts are

	[a]n index of prospectus disclosure requirements regarding the Issuer's contracts outside the ordinary course of business. Equals one if the law or the listing rules require that the terms of material contracts made by the Issuer outside the ordinary course of its business be disclosed in the prospectus; equals one half if the terms of only some material contracts made outside the ordinary course of business must be disclosed; and equals zero otherwise. *Id.* (5) Transactions are [a]n index of the prospectus disclosure requirements regarding transaction[s] between the Issuer and its directors, officers, and/or large shareholders (i.e., "related parties"). Equals one if the law or the listing rules require that all transactions in which related parties have, or will have, an interest be disclosed in the prospectus; equals one half if only some transactions between the Issuer and related parties must be disclosed in the prospectus; and equals zero if transactions between the Issuer and related parties need not be disclosed in the prospectus. La Porta et al., *What Works?*, *supra* note 8, at 6.
Accounting	The accounting index is a measure of the quality of accounting standards. The accounting index assigns a rating to companies' 1990 annual reports on the basis of their inclusion or exclusion of ninety items. The ninety items are divided into seven categories (general information, income statements, balance sheets, funds flow statement, accounting standards, stock data and special items). For each country, the index is based on examination of a minimum of three companies. The companies represent a cross-section of various industries. Seventy percent are industrial companies, while the remaining thirty percent are financial companies. La Porta et al., *Law and Finance*, *supra* note 8.

ILLUSTRATION 5: INSIDER TRADING LAW AND ENFORCEABILITY

This Table presents the insider trading law and enforcement measures for the sample countries, grouped by their legal origins: English common law versus European civil law. The columns contain the following variables: (1) *Scope* equals the sum of *Tipping* and *Tippee*; (2) *Sanction* equals the sum of *Damages* and *Criminal*; (3) the *aggregate IT Law index* is the sum of *Scope* and *Sanction*; (4) *Enforced by 1994* equals one if the insider trading prohibition was enforced by 1994, and zero otherwise; (5) *Public Enforcement Power* is the mean of the indices of the securities market supervisor's characteristics and investigative powers; and (6) *Private Enforcement Power* is the product of *Private Right* and the efficiency of the judiciary. All variables are described in detail in Illustration 4. The superscripts *a*, *b*, and *c* denote statistical significance at the 1%, 5%, and 10% levels, respectively. N/A signifies that the relevant information is not available for the country in question.

	Scope (1)	Sanction (2)	IT Law (3)	Enforced by 1994 (4)	Public Enforcement Power (5)	Private Enforcement Power (6)
Common Law Countries						
Australia	2. 00	1. 00	3. 00	0	0. 88	10. 00
Canada	2. 00	2. 00	4. 00	1	0. 81	9. 25
Hong Kong	2. 00	1. 00	3. 00	1	0. 75	0. 00
India	1. 00	1. 00	2. 00	0	0. 69	0. 00
Ireland	2. 00	1. 00	3. 00	0	0. 13	8. 75
Malaysia	1. 00	1. 00	2. 00	0	0. 69	9. 00
Singapore	2. 00	1. 00	3. 00	1	0. 75	10. 00
South Africa	1. 00	1. 00	2. 00	0	0. 38	6. 00
Thailand	2. 00	1. 00	3. 00	1	0. 88	0. 00
UK	2. 00	1. 00	3. 00	1	0. 63	0. 00
USA	2. 00	2. 00	4. 00	1	1. 00	10. 00
Common Law Average	**1. 73**	**1. 18**	**2. 91**	**0. 54**	**0. 69**	**5. 73**
Civil Law Countries						
Austria	2. 00	0. 00	2. 00	0	0. 13	0. 00
Belgium	2. 00	1. 00	3. 00	1	0. 13	0. 00
Brazil	2. 00	0. 00	2. 00	1	0. 50	5. 75
Denmark	2. 00	1. 00	3. 00	0	0. 38	0. 00
Finland	2. 00	1. 00	3. 00	1	0. 38	0. 00
France	2. 00	2. 00	4. 00	1	0. 94	0. 00
Germany	2. 00	1. 00	3. 00	0	0. 25	0. 00
Greece	2. 00	0. 00	2. 00	0	0. 38	0. 00

	Scope (1)	Sanction (2)	IT Law (3)	Enforced by 1994 (4)	Public Enforcement Power (5)	Private Enforcement Power (6)
Indonesia	1. 00	1. 00	2. 00	0	0. 75	0. 00
Italy	2. 00	1. 00	3. 00	0	0. 50	0. 00
Japan	1. 00	1. 00	2. 00	1	0. 00	0. 00
Luxembourg	2. 00	1.00	3. 00	0	N/A	0. 00
Mexico	1. 00	0. 00	1. 00	0	0. 25	0. 00
Netherlands	2. 00	1. 00	3. 00	1	0. 50	0. 00
Norway	1. 00	0. 00	1. 00	1	0. 13	0. 00
Philippines	1. 00	1. 00	2. 00	0	0. 88	0. 00
Portugal	2. 00	1. 00	3. 00	0	0. 88	5. 50
South Korea	2. 00	2. 00	4. 00	1	0. 38	6. 00
Spain	2. 00	1. 00	3. 00	0	0. 50	6. 25
Sweden	2. 00	1. 00	3. 00	1	0. 25	0. 00
Switzerland	2. 00	1. 00	3. 00	0	0. 25	0. 00
Taiwan	2. 00	1. 00	3. 00	1	0. 38	6. 75
Civil Law Average	**1. 77**	**0. 86**	**2. 64**	**0. 45**	**0. 41**	**1. 44**
Overall Average	**1. 76**	**0. 97**	**2. 73**	**0. 48**	**0. 51**	**2. 91**
T-Test of Difference in Means (Common Law vs. Civil Law)	**-0. 28**	**1. 67[c]**	**0. 97**	**0. 48**	**2. 86[a]**	**3. 33[a]**

ILLUSTRATION 6: SUMMARY STATISTICS

This Table presents the averages, medians and standard deviations of the three dependent variables (*Ownership Dispersion*, *Stock Price Synchronicity* and *Average Stock Market Turnover*) and the control variables (*Log of GDP Per Capita*, *GDP Growth Per Capita*, *Anti-Director Rights*, *Disclosure*, and *Accounting Standards*). All variables are described in detail in Illustration 4. The superscripts *a* and *b* denote statistical significance at the 1% and 5% levels, respectively.

	Avg.	Median	Standard Deviation	Common Law Avg.	Civil Law Avg.	T-Test Statistic
Dependent Variables						
Ownership Dispersion	57. 00	54. 00	13. 90	59. 80	55. 50	-0. 82
Stock Price Synchronicity	66. 25	66. 60	4. 34	65. 76	66. 52	0. 46
Average Stock Market Turnover	58. 90	44. 85	46. 22	44. 54	63. 49	1. 12
Control Variables						
Log of GDP per capita	9. 31	9. 89	1. 32	9. 13	9. 63	1. 12
GDP Growth per capita	3. 94	3. 06	2. 54	4. 67	3. 56	-1. 18
Anti-director Rights	3. 50	3. 50	1. 12	4. 45	3. 11	-4. 24[a]
Disclosure	0. 66	0. 67	0. 21	0. 88	0. 55	-5. 91[a]
Accounting	65. 80	65. 00	9. 47	71. 20	63. 10	-2. 38[b]

ILLUSTRATION 7: CORRELATION MATRIX

This Table presents pair wise correlation coefficients for the dependent variables, the substantive insider trading law measures and the enforcement measures. All variables are described in detail in Illustration 4. The numbers in parentheses are the probability levels (p-values) at which the null hypothesis of zero correlation can be rejected in two-tailed tests. The superscripts *a*, *b*, and *c* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1) Ownership Dispersion	(2) Stock Price Synchronicity	(3) Average Stock Market Turnover	(4) Scope	(5) Sanction	(6) IT Law	(7) Enforced by 1994	(8) Public Enforc't Power	(9) Private Enforc't Power
Dependent Variables									
(1) Ownership Dispersion	1. 00								
(2) Stock Price Synchronicity	-0. 19 (0. 31)	1. 00							
(3) Average stock market turnover	0. 39[b] (0. 03)	-0. 15 (0. 42)	1. 00						
Insider Trading Law Measures									
(4) Scope	0. 13 (0. 47)	-0. 39[b] (0. 03)	0. 37b (0. 03)	1. 00					
(5) Sanction	0. 53[a] (0. 00)	-0. 37[b] (0. 04)	0. 16 (0. 38)	0. 32[c] (0. 06)	1. 00				
(6) IT Law	0. 41[b] (0. 02)	-0. 36[b] (0. 05)	0. 24 (0. 17)	0. 69[a] (0. 00)	0. 79[a] (0. 00)	1. 00			
Enforcement Measures									
(7) Enforced by 1994	0. 52[a] (0. 00)	-0. 11 (0. 55)	0. 19 (0. 28)	0. 29[c] (0. 09)	0. 35[b] (0. 04)	0. 33[b] (0. 05)	1. 00		
(8) Public Enforcement Power	0. 01 (0. 96)	-0. 28 (0. 13)	-0. 09 (0. 60)	0. 08 (0. 66)	0. 47[a] (0. 00)	0. 41[b] (0. 02)	0. 06 (0. 76)	1. 00	
(9) Private Enforcement Power	0. 19 (0. 28)	-0. 05 (0. 78)	-0. 01 (0. 96)	0. 15 (0. 40)	0. 34[c] (0. 06)	0. 70[a] (0. 00)	0. 02 (0. 92)	0. 33[c] (0. 07)	1. 00

ILLUSTRATION 8: OWNERSHIP DISPERSION

This Table presents ordinary least squares regressions for the dependent variable ownership dispersion. The variables *Scope* and *Sanction* are centered about their means to address multicollinearity. The variable *Scope*Sanction* is the product of mean-centered *Scope* and mean-centered *Sanction*. Illustration 4 describes all of the variables in detail. Robust standard errors are reported in parentheses. The superscripts a, b, and c denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent and Control Variables	Model 1	Model 2	Model 3
Scope	-0. 06 (0. 08)	-0. 08 (0. 06)	-0. 10[c] (0. 07)
Sanction	0. 15[a] (0. 05)	0. 15[a] (0. 05)	0. 16[b] (0. 06)
Scope* Sanction	0. 08 (0. 11)	0. 06 (0. 09)	0. 06 (0. 10)
Disclosure	-0. 13 (0. 19)	-0. 23 (0. 20)	-0. 26 (0. 24)
Anti-Director Rights	0. 03 (0. 02)	0. 02 (0. 02)	0. 02 (0. 02)
French Civil Law	-0. 10 (0. 08)	-0. 13 (0. 09)	-0. 14 (0. 10)
German Civil Law	0. 03 (0. 08)	0. 01 (0. 09)	0. 01 (0. 10)
Scandina-vian Civil Law	0. 02 (0. 10)	-0. 02 (0. 09)	-0. 03 (0. 12)
Log of GDP per capita	0. 02 (0. 03)	0. 01 (0. 02)	0. 01 (0. 03)
GDP Growth per capita	-0. 01 (0. 01)	-0. 01 (0. 01)	-0. 01 (0. 01)
Enforced by 1994		0. 09[b] (0. 04)	0. 09[b] (0. 04)
Public Enforcement Power			0. 02 (0. 12)
Private Enforcement Power			-0. 00 (0. 01)
Constant	0. 39 (0. 39)	0. 61[b] (0. 32)	0. 58 (0. 38)
No. of Obs.	31	31	31
R^2	0. 58	0. 65	0. 67

ILLUSTRATION 9: STOCK PRICE SYNCHRONICITY

This Table presents ordinary least squares regressions for the dependent variable stock price synchronicity. The variables *Scope* and *Sanction* are centered about their means to address multicollinearity. The variable *Scope*Sanction* is the product of mean-centered *Scope* and mean-centered *Sanction*. Illustration 4 describes all of the variables in detail. Robust standard errors are reported in parentheses. The superscripts *a*, *b*, and *c* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent and Control Variables	Model 1	Model 2	Model 3
Scope	0. 27 (2. 58)	0. 58 (2. 47)	2. 49 (2. 39)
Sanction	-5. 39[a] (1. 54)	-5. 44[a] (1. 52)	-5. 28[a] (1. 37)
Scope*Sanction	-4. 55 (3. 30)	-4. 30 (3. 20)	-5. 48[c] (3. 02)
Disclosure	16. 53[a] (5. 84)	17. 56[a] (6. 25)	24. 14[a] (5. 51)
Anti-Director Rights	0. 04 (0. 90)	0. 11 (0. 85)	0. 23 (0. 64)
French Civil Law	5. 30[b] (2. 13)	5. 66[b] (2. 14)	7. 61[a] (1. 93)
German Civil Law	5. 16 (3. 15)	5. 47[c] (3. 20)	5. 52[b] (2. 39)
Scandinavian Civil Law	6. 29[b] (2. 61)	6. 72[b] (2. 92)	8. 09[a] (2. 57)
Log of GDP per Capita	-0. 52 (0. 72)	-0. 41 (0. 77)	-1. 35[c] (0. 76)
Growth of GDP	0. 78[b] (0. 33)	0. 81[b] (0. 34)	0. 75[b] (0. 29)
Enforced by 1994		-0. 78 (1. 56)	-0. 44 (1. 58)
Public Enforcement Power			-7. 30[a] (1. 90)
Private Enforcement Power			0. 25 (0. 18)
Constant	53. 82[a] (8. 27)	51. 93[a] (9. 42)	59. 85[a] (9. 14)
No. of Obs.	30	30	30
R^2	0. 62	0. 63	0. 74

ILLUSTRATION 10: STOCK MARKET TURNOVER

This Table presents ordinary least squares regressions for the dependent variable log of average stock market turnover between 1991 and 1995. The variables *Scope* and *Sanction* are centered about their means to address multicollinearity. The variable *Scope*Sanction* is the product of mean-centered *Scope* and mean-centered *Sanction*. Illustration 4 describes all of the variables in detail. Robust standard errors are reported in parentheses. The superscripts *a*, *b*, and *c* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent and Control Variables	Model 1	Model 2	Model 3
Scope	0. 87[*]	0. 84[c]	0. 58
	(0. 40)	(0. 42)	(0. 36)
Sanction	0. 01	0. 01	-0. 06
	(0. 25)	(0. 26)	(0. 29)
Scope*Sanction	1. 26[a]	1. 24[b]	1. 33[a]
	(0. 48)	(0. 49)	(0. 48)
Disclosure	0. 09	-0. 02	-0. 77
	(0. 94)	(1. 04)	(1. 03)
Anti-Director Rights	0. 08	0. 07	0. 09
	(0. 14)	(0. 15)	(0. 14)
French Civil Law	0. 10	0. 06	-0. 12
	(0. 39)	(0. 40)	(0. 41)
German Civil Law	0. 94[c]	0. 92[c]	1. 03[c]
	(0. 47)	(0. 50)	(0. 59)
Scandinavian Civil Law	0. 14	0. 09	0. 04
	(0. 36)	(0. 41)	(0. 52)
Log of GDP per Capita	0. 00	-0. 01	0. 10
	(0. 14)	(0. 14)	(0. 14)
Growth of GDP	-0. 06	-0. 06	-0. 05
	(0. 05)	(0. 05)	(0. 05)
Enforced by 1994		0. 10	0. 08
		(0. 25)	(0. 23)
Public Enforcement Power			1. 04
			(0. 93)
Private Enforcement Power			-0. 02
			(0. 03)
Constant	3. 35[b]	3. 57[b]	2. 43
	(1. 62)	(1. 84)	(2. 16)
No. of Obs.	31	31	31
R^2	0. 60	0. 60	0. 66

[*] Significant at the 11% level only.

ILLUSTRATION 11: INTERACTION OF SANCTIONS AND PUBLIC ENFORCEMENT

This Table presents ordinary least squares regressions for the dependent variables: ownership dispersion, stock price synchronicity, and the log of average stock market turnover. In columns 1, 3, and 5, the insider trading law variables are only *Scope* and *Public Enforcement Power*Sanction*. The regressions in columns 2, 4 and 6 contain the same independent variables as Model 3 presented in Illustrations 8-10, respectively, and *Public Enforcement Power*Sanction*. In columns 2, 4 and 6, the insider trading law variables and *Public Enforcement Power* are centered around their means to address multicollinearity. All variables are described in detail in Illustration 4. Robust standard errors are reported in parentheses. The superscripts *a*, *b*, and *c* denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Independent and Control Variables	Ownership Dispersion (1)	Ownership Dispersion (2)	Stock Price Synchro-nicity (3)	Stock Price Synchro-nicity (4)	Log of Average Stock Market Turnover (5)	Log of Average Stock Market Turnover (6)
Scope	-0. 03	-0. 12	1. 02	2. 02	0. 45	0. 69[‡]
	(0. 07)	(0. 07)	(2. 06)	(2. 54)	(0. 36)	(0. 44)
Sanction		0. 15[b]		-5. 35[a]		-0. 05
		(0. 06)		(1. 38)		(0. 29)
Scope* Sanction		0. 12		-4. 43		1. 09[¥]
		(0. 13)		(3. 37)		(0. 64)
Disclosure	0. 07	-0. 35	14. 35[a]	22. 74[a]	-0. 27	-0. 43
	(0. 20)	(0. 29)	(4. 90)	(5. 69)	(0. 70)	(1. 41)
Anti-Director Rights	0. 02	0. 01	-0. 04	-0. 36	0. 05	0. 12
	(0. 02)	(0. 02)	(0. 68)	(0. 71)	(0. 14)	(0. 16)
French Civil Law	-0. 03	-0. 18	3. 78[b]	6. 98[a]	0. 13	0. 03
	(0. 09)	(0. 12)	1. 83	(2. 11)	(0. 34)	(0. 56)
German Civil Law	0. 11	-0. 01	2. 20	5. 17[b]	0. 95[b]	1. 12[c]
	(0. 09)	(0. 11)	(2. 18)	(2. 41)	(0. 43)	(0. 62)
Scandinavian Civil Law	0. 10	-0. 07	3. 32	7. 47[a]	0. 39	0. 19
	(0. 10)	(0. 14)	2. 26	(2. 49)	(0. 38)	(0. 64)
Log of GDP per Capita	0. 03	0. 02	-1. 20[b]	-1. 23	0. 12	0. 08
	(0. 03)	(0. 03)	(0. 52)	(0. 80)	(0. 13)	(0. 15)
Growth of GDP	-0. 00	-0. 02	0. 46	0. 70[b]	-0. 03	-0. 04
	(0. 01)	(0. 01)	(0. 28)	(0. 31)	(0. 04)	(0. 06)
Enforced by 1994		0. 10[b]		-0. 30		0. 04
		(0. 04)		(1. 61)		(0. 24)
Public Enforcement Power		0. 09		-6. 22[c]		0. 79
		(0. 16)		(2. 54)		(1. 05)

[‡] Significant at the 13% level only.
[¥] Significant at the 11% level only.

Private Enforcement Power		-0. 00 (0. 01)		0. 25 (0. 18)		-0. 02 (0. 03)
Public Enforcement Power* Sanction	0. 11[b] (0. 05)	-0. 16 (0. 19)	-6. 66[a] (1. 06)	-2. 74 (3. 66)	0. 52[c] (0. 26)	0. 64 (0. 97)
Constant	0. 09 (0. 34)	0. 61 (0. 40)	66. 07[a] (6. 65)	60. 23[a] (9. 37)	1. 42 (1. 27)	2. 33 (2. 25)
No. of Obs.	31	31	30	30	31	31
R^2	0. 49	0. 68	0. 68	0. 74	0. 57	0. 67

An Overview of US Insider Trading Law: Lessons for the EU?

Stephen M. Bainbridge[*]

The prohibition of insider trading originally evolved in the United States as a matter of the state law fiduciary duties of corporate directors and officers. Even after securities regulation became a matter principally of Federal concern following the adoption of the Securities Act of 1933 and the Securities Exchange Act of 1934, federal law continued to largely ignore insider trading until the late 1960s. In the last four decades, however, a complex federal prohibition of insider trading has emerged as a central feature of modern U.S. securities regulation.

Although the modern insider trading prohibition technically is grounded in the federal securities regulation statutes, most notably Rule 10b-5 promulgated by the Securities and Exchange Commission (SEC) pursuant to the authority granted it by Section 10(b) of the Securities Exchange Act, the prohibition in fact evolved through a series of judicial decisions in a process more closely akin to common law adjudication rather than statutory interpretation.

Taken together, the statutes and case law provide a comprehensive scheme of insider trading regulation upon which EU member states usefully may draw in implementing Directive 2003/6/EC on insider dealing. As this Essay explains, however, the ad hoc process by which U.S. law evolved has created a number of doctrinal problems that the member states would do well to avoid.

I. Origins of the Federal Prohibition

Change is one of the key distinguishing characteristics of the federal insider trading prohibition. Although the prohibition is only about three decades old, already it has seen more shifts in doctrine than most corporate law rules have seen in the last century. In particular, there has been a steady pattern in which new theories of liability have emerged. We shall see two very important cases in which the Supreme Court restricted the scope of the traditional disclose or abstain rule. In response to those cases, the SEC and the lower courts developed two new theories on which liability could be imposed. Unfortunately, this process has been rather ad hoc, which has left the doctrine with a number of problems and curious gaps.

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A. The Statutory Background

The core of the modern federal insider trading prohibition derives its statutory authority from § 10(b) of the Exchange Act, which provides in pertinent part that:

> It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce or of the mails, or of any facility of any national securities exchange –
>
> (b) To use or employ, in connection with the purchase or sale of any security registered on a national securities exchange or any security not so registered …, any manipulative or deceptive device or contrivance in contravention of such rules and regulations as the Commission may prescribe as necessary or appropriate in the public interest or for the protection of investors. …[1]

Notice two things about this text. First, it is not self executing. Until the SEC exercises the rulemaking authority vested on it by the statute, § 10(b) does nothing.

The second point to be noticed is that nothing in § 10(b) explicitly proscribes insider trading. To the extent the 1934 Congress addressed insider trading, it did so not through § 10(b), but rather through § 16(b), which permits the issuer of affected securities to recover insider short-swing profits.[2] Section 16(b) imposes quite limited restrictions on insider trading. It does not reach transactions occurring more than six months apart, nor does it apply to persons other than those named in the statute or to transactions in securities not registered under § 12.

If Congress intended in 1934 that the SEC use § 10(b) to craft a sweeping prohibition on insider trading, the SEC was quite dilatory in doing so. Rule 10b-5, the foundation on which the modern insider trading prohibition rests, was not promulgated until 1942, eight years after Congress passed the Exchange Act. The Rule provides:

> It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce, or of the mails or of any facility of any national securities exchange,
>
> (a) To employ any device, scheme, or artifice to defraud,
>
> (b) To make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, or
>
> (c) To engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of any security.[3]

Note that, as with § 10(b) itself, the rule on its face does not prohibit (or even speak to) insider trading. Nor was Rule 10b-5 initially used against insider trading on public secondary trading markets. Instead, the initial Rule 10b-5 cases were limited to face-to-face and/or control transactions.[4] Not until 1961 did the SEC finally conclude that insider trading on an impersonal stock exchange violated Rule 10b-5.[5] In sum, the modern prohibition is a creature of SEC administrative actions and judicial opinions, only loosely tied to the statutory language and its legislative history.

[1] 15 U.S.C. § 78j(b).

[2] 15 U.S.C. § 78p(b).

[3] 17 CFR § 240.10b-5.

B. The Disclose or Abstain Rule

The modern federal insider prohibition began taking form in *SEC v. Texas Gulf Sulphur Co*.[6] The *TGS* opinion rested on a policy of equality of access to information. The court contended that the federal insider trading prohibition was intended to assure that "all investors trading on impersonal exchanges have relatively equal access to material information." Put another way, the majority thought Congress intended "that all members of the investing public should be subject to identical market risks." Accordingly, under *TGS* and its progeny, virtually anyone who possessed material nonpublic information was required either to disclose it before trading or abstain from trading in the affected company's securities. If the would-be trader's fiduciary duties precluded him from disclosing the information prior to trading, abstention was the only option.

In *Chiarella v. US*,[7] the United States Supreme Court rejected the equal access policy. Instead, the Court made clear that liability could be imposed only if the defendant was subject to a duty to disclose prior to trading. In turn, the requisite duty to disclose arises out of a fiduciary relationship between the inside trader and the persons with whom he trades. *Chiarella* thus made clear that the disclose or abstain rule is not triggered merely because the trader possesses material nonpublic information. When a securities fraud action is based upon nondisclosure, there can be no fraud absent a duty to speak, and no such duty arises from the mere possession of nonpublic information.

C. Tipping

Chiarella substantially limited the scope of the insider trading prohibition. As such, it posed the question whether anyone other than classical insiders such as directors, officers, and perhaps large shareholders could be held liable for dealing on the basis of insider information. In *Dirks v. SEC*,[8] the Supreme Court confirmed that the prohibition

[4] See, e.g., Speed v. Transamerica Corp., 99 F. Supp. 808 (D. Del. 1951) (omissions in connection with what amounted to tender offer).

[5] In re Cady, Roberts & Co., 40 S.E.C. 907 (1961).

[6] 401 F.2d 833 (2d Cir. 1968), cert. denied, 394 U.S. 976 (1969).

[7] 445 U.S. 222 (1980).

[8] Dirks v. SEC, 463 U.S. 646 (1983).

extended beyond classical insiders and began fleshing out the rules applicable to them. The court began by reaffirming its rejection of the equal access standard:

> We were explicit in *Chiarella* in saying that there can be no duty to disclose where the person who has traded on inside information "was not [the corporation's] agent, . . . was not a fiduciary, [or] was not a person in whom the sellers [of the securities] had placed their trust and confidence." Not to require such a fiduciary relationship, we recognized, would "[depart] radically from the established doctrine that duty arises from a specific relationship between two parties" and would amount to "recognizing a general duty between all participants in market transactions to forgo actions based on material, nonpublic information."

The court then explained that the prohibition applied not only when such a person traded but also when such a person tipped inside information to someone who then trades.

The court held that a tippee's liability is derivative of that of the tipper, "arising from [the tippee's] role as a participant after the fact in the insider's breach of a fiduciary duty." A tippee therefore can be held liable only when the tipper breached a fiduciary duty by disclosing information to the tippee, and the tippee knows or has reason to know of the breach of duty.

What *Dirks* proscribes thus is not merely a breach of confidentiality by the insider, but rather the breach of a fiduciary duty of loyalty to refrain from profiting on information entrusted to the tipper. Looking at objective criteria, courts must determine whether the insider-tipper personally benefited, directly or indirectly, from his disclosure. The most obvious case is the *quid pro quo* setting, in which the tipper gets some form of pecuniary gain. Nonpecuniary gain can also qualify, however. Suppose a corporate CEO discloses information to a wealthy investor not for any legitimate corporate purpose, but solely to enhance his own reputation. *Dirks* would find a personal benefit on those facts. Finally, *Dirks* indicated that liability could be imposed where the tip is a gift, because it is analogous to the situation in which the tipper trades on the basis of the information and then gives the tippee the profits.

Because *Dirks* requires that the tipper receive some personal benefit, it did not prohibit corporate insiders from selectively disclosing information to certain analysts so long as there was a corporate purpose for doing so. In 2000, the SEC adopted Regulation FD to create a noninsider trading-based mechanism for restricting selective disclosure. If someone acting on behalf of a public corporation discloses material nonpublic information to securities market professionals or "holders of the issuer's securities who may well trade on the basis of the information," the issuer must also disclose that information to the public. Where the issuer intentionally provides such disclosure, it must simultaneously disclose the information in a manner designed to convey it to the general public. Hence, for example, if the issuer holds a briefing for selected analysts, it must simultaneously announce the same information through, say, a press release to "a widely disseminated news or wire service." The SEC encouraged issuers to make use of the Internet and other new information technologies, such as by webcasting conference calls with analysts. Where the disclosure was not intentional, as where a corporate officer "let

something slip," the issuer must make public disclosure "promptly" after a senior officer learns of the disclosure.

D. The Misappropriation Theory and Rule 14e-3

Dirks did not resolve the significant question posed by *Chiarella*; namely, to what extent does the insider trading prohibition apply where the defendant traded on the basis of market information derived from sources other than the issuer. The classic case is where an insider of a takeover bidder trades in stock of the target company on the basis of information about the bidder's plans. Such a person is not one in whom the shareholders of the target have placed their trust and confidence. Accordingly, under *Chiarella* no liability should arise. (Indeed, *Chiarella* involved just such facts.)

Rule 14e-3 prohibits insiders of the bidder and target from divulging confidential information about a tender offer to persons that are likely to violate the rule by trading on the basis of that information. This provision (Rule 14e-3(d)(1)) does not prohibit the bidder from buying target shares or from telling its legal and financial advisers about its plans. Instead, it prohibits tipping of information to persons who are likely to buy target shares for their own account. Rule 14e-3 also, with certain narrow and well-defined exceptions, prohibits any person that possesses material information relating to a tender offer by another person from trading in target company securities if the bidder has commenced or has taken substantial steps towards commencement of the bid.

Unlike both the disclose or abstain rule and the misappropriation theory under Rule 10b-5, Rule 14e-3 liability is not premised on breach of a fiduciary duty. There is no need for a showing that the trading party or tipper was subject to any duty of confidentiality, and no need to show that a tipper personally benefited from the tip.

Misappropriation. In response to the set-backs it suffered in *Chiarella* and *Dirks*, the SEC began advocating a new theory of insider trading liability: the misappropriation theory. Unlike Rule 14e-3, the SEC did not intend for the misappropriation theory to be limited to tender offer cases (although many misappropriation decisions have in fact involved takeovers). Accordingly, the Commission posited misappropriation as a new theory of liability under Rule 10b-5.

In *US v. O'Hagan*,[9] the Supreme Court endorsed the misappropriation theory as a valid basis for insider trading liability. A fiduciary's undisclosed use of information belonging to his principal, without disclosure of such use to the principal, for personal gain constitutes fraud in connection with the purchase or sale of a security and thus violates Rule 10b-5.

The court acknowledged that misappropriators have no disclosure obligation running to the persons with whom they trade. Instead, it grounded liability under the

[9] 521 U.S. 642 (1997).

misappropriation theory on deception of the source of the information: the theory addresses the use of "confidential information for securities trading purposes, in breach of a duty owed to the source of the information." Under this theory, "a fiduciary's undisclosed, self serving use of a principal's information to purchase or sell securities, in breach of a duty of loyalty and confidentiality, defrauds the principal of the exclusive use of that information." So defined, the majority held, the misappropriation theory satisfies § 10(b)'s requirement that there be a "deceptive device or contrivance" used "in connection with" a securities transaction.

In many respects, *O'Hagan* posed more new questions than it answered old ones. For example, is there liability for so-called brazen misappropriators? Because the *O'Hagan* majority made clear that disclosure to the source of the information is all that is required under Rule 10b-5, ifa brazen misappropriator discloses his trading plans to the source, and then trades on that information, Rule 10b-5 is not violated, even if the source of the information refused permission to trade and objected vigorously.

Would there be liability for authorized trading? Suppose a proxy contest insurgent authorized an arbitrageur to trade in a target company's stock on the basis of material nonpublic information about the prospective insurgent's intentions. The *O'Hagan* majority at least implicitly validated such transactions. It approvingly quoted, for example, the statement of the government's counsel that "to satisfy the common law rule that a trustee may not use the property that [has] been entrusted [to] him, there would have to be consent." Hence, assuming such consent is forthcoming, the arbitrageur would escape Rule 10b-5 liability. Note that Rule 14e-3 would not apply because the transaction is a proxy contest rather than a tender offer.

These and the various other doctrinal questions that pervade the insider trading prohibition are a direct consequence of the ad hoc process of common law adjudication by which the prohibition has evolved in the US. Directive 2003/6/EC gives the EU;s member states a valuable opportunity to avoid these problems by writing on a more-or-less blank slate.

II. Elements of the Modern Prohibition

Inside versus market information: Nonpublic information, for purposes of Rule 10b-5, takes two principal forms: "inside information" and "market information." Inside information typically comes from internal corporate sources and involves events or developments affecting the issuer's assets or earnings. Market information typically originates from sources other than the issuer and involves events or circumstances concerning or affecting the price or market for the issuer's securities and does not concern the issuer's assets or earning power. Under US law, the use of either sort is prohibited.

Materiality: Liability arises only with respect to trading on the basis of material information. Materiality is defined for this purpose as whether there is a substantial likelihood that a reasonable investor would consider the omitted fact important in deciding whether to buy or sell securities.[10]

Nonpublic Information: When can insiders trade? Insiders may not trade whenever they are in possession of material nonpublic information. When the information in question is disclosed, insiders may trade but only after the information in question has been effectively made public. The information must have been widely disseminated and public investors must have an opportunity to act on it. At a minimum, insiders therefore must wait until the news could reasonably be expected to appear over the major business news wire services.

Who is an insider? The term insider trading is something of a misnomer. To be sure, the modern federal insider trading prohibition proscribes a corporation's officers and directors from trading on the basis of material nonpublic information about their firm, but it also casts a far broader net.

At common law, the insider trading prohibition focused on corporate officers and directors. The short-swing profit insider trading restrictions provided by §16(b) similarly are limited to officers, directors, and shareholders owning more than 10 percent of the company's stock. In the seminal *Texas Gulf Sulphur* decision, some of the defendants were middle managers and field workers. The court had little difficulty finding that such mid-level corporate employees were insiders for purposes of § 10(b). Subsequent courts have agreed that employees and agents are covered just as are directors and officers.

In *Dirks*, the Supreme Court made clear that the prohibition also extends to a variety of nominal outsiders whose relationship to the issuer is sufficiently close to justify treating them as "constructive insiders." The Court offered as examples: "an underwriter, accountant, lawyer or consultant working for the corporation." More generally, the court held that an outsider becomes a constructive insider where he obtains material nonpublic information from the issuer with an expectation on the part of the corporation that the outsider will keep the disclosed information confidential and the relationship at least implies such a duty.

Possession or use? The SEC long has argued that trading while in knowing possession of material nonpublic information satisfies Rule 10b-5's scienter requirement. In *United States v. Teicher*,[11] the Second Circuit agreed, albeit in a passage that appears

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[10] Basic Inc. v. Levinson, 485 U.S. 224, 231-32 (1988).

[11] 987 F.2d 112 (2d Cir. 1993). See generally Allan Horwich, Possession Versus Use: Is there a Causation Element in the Prohibition on Insider Trading? 52 Bus. Law. 1235 (1997); Donna M. Nagy, The "Possession vs. Use" Debate in the Context of Securities Trading by Traditional Insiders: Why Silence Can Never Be Golden, 67 U. Cin. L. Rev. 1129 (1999).

to be dictum. In *SEC v. Adler*,[12] however, the Eleventh Circuit rejected *Teicher* in favor of a use standard. Under *Adler*, "when an insider trades while in possession of material nonpublic information, a strong inference arises that such information was used by the insider in trading. The insider can attempt to rebut the inference by adducing evidence that there was no causal connection between the information and the trade—i.e., that the information was not used."

In an attempt to resolve the dispute, the SEC adopted Rule 10b5-1, which states that Rule 10b-5's prohibition of insider trading is violated whenever someone trades "on the basis of" material nonpublic information. Because one is deemed, subject to certain narrow exceptions, to have traded "on the basis of" material nonpublic information if one was aware of such information at the time of the trade, Rule 10b5-1 formally rejects the *Adler* position. In practice, however, the difference between *Adler* and Rule 10b5-1 may prove insignificant. While *Adler* created a presumption of use when the insider was aware of material nonpublic information, Rule 10b5-1 provides affirmative defenses for insiders who trade pursuant to a pre-existing plan, contract, or instructions. As a result, the two approaches should lead to comparable outcomes in most cases.

Is there liability for trading in debt securities? One of the areas in which the Supreme Court's failure adequately to specify the source and nature of the fiduciary obligation underlying the disclose or abstain rule has proven especially problematic is insider trading in debt securities. Yet, the prohibition's application to debt securities has received surprisingly little judicial attention. One court has held that insider trading in convertible debentures violates Rule 10b-5,[13] but this case is clearly distinguishable from nonconvertible debt securities. As to the latter, there is still no definitive resolution.

III. Remedies and Penalties

Under Exchange Act § 32(a), a willful violation of Rule 10b-5 or 14e-3 is a felony that can be punished by both fines and jail time. Although the SEC has no authority to prosecute criminal actions against inside traders, it is authorized by Exchange Act §21(d)(1) to ask the Justice Department to initiate a criminal prosecution. In addition, the Justice Department may bring such a prosecution on its own initiative.

[12] 137 F.3d 1325 (11th Cir. 1998). The Ninth Circuit subsequently agreed with *Adler* that proof of use, not mere possession, is required. The Ninth Circuit further held that in criminal cases no presumption of use should be drawn from the fact of possession—the government must affirmatively prove use of nonpublic information. United States v. Smith, 155 F.3d 1051 (9th Cir. 1998).

[13] In re Worlds of Wonder Securities Litigation, [1990-1991 Trans. Binder] Fed. Sec. L. Rep. (CCH) ¶ 95,689 (N.D.Cal. 1990).

Most insider trading litigation, however, consists of civil actions brought by the SEC.[14] Under Exchange Act §21(d), the SEC may seek a permanent or temporary injunction whenever "it shall appear to the Commission that any person is engaged or is about to engage in any acts or practices constituting a violation" of the Act or any rules promulgated thereunder. "Once the equity jurisdiction of the district court has been properly invoked by a showing of a securities law violation, the court possesses the necessary power to fashion an appropriate remedy."[15] Thus, in addition to or in place of injunctive relief, the SEC may seek disgorgement of profits, correction of misleading statements, disclosure of material information, or other special remedies. Of these, disgorgement of profits to the government is the most commonly used enforcement tool.

Finally, among other remedies and sanctions, the Insider Trading Sanctions Act of 1984 created a civil monetary penalty of up to three times the profit gained or loss avoided by a person who violates Rules 10b-5 or 14e-3 "by purchasing or selling a security while in the possession of material nonpublic information." An action to impose such a penalty may be brought in addition to or in lieu of any other actions that the SEC or Justice Department is entitled to bring.

IV. Conclusion

Because of the space limitations imposed on this essay, the analysis herein necessarily touched only briefly on some of the most prominent foibles and gaps that have been created in the US insider trading law by the ad hoc process of common law adjudication by which the prohibition has evolved.[16] It is to be hoped that the EU's member states will take advantage of the opportunity provided by Directive 2003/6 to adopt the best aspects of US law, while avoiding the worst of our foibles and gaps.

[14] Although it has long been clear that persons who traded contemporaneously with an inside trader have a private cause of action under Rule 10b-5 (and perhaps Rule 14e-3), and may also have state law claims, private party litigation against inside traders has been rare and usually parasitic on SEC enforcement actions.

[15] SEC v. Manor Nursing Centers, 458 F.2d 1082, 1103 (2d Cir. 1972). The SEC may also punish insider trading by regulated market professionals through administrative proceedings. Under §15(b)(4) of the 1934 Act, the SEC may censure, limit the activities of, suspend, or revoke the registration of a broker or dealer who willfully violates the insider trading prohibition. Similar sanctions may be imposed on those associated with the broker or dealer in such activities. The SEC may issue a report of its investigation of the incident even if it decides not to pursue judicial or administrative proceedings, which may lead to private litigation.

[16] For a more detailed treatment of the various idiosyncrasies of US insider trading law, see Stephen M. Bainbridge, *Insider Trading Regulation: The Path Dependent Choice between Property Rights and Securities Fraud*, 52 SMU LAW REVIEW 1589 (1999), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=142296.

Managerial Value Diversion and Shareholder Wealth

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Managerial Value Diversion and Shareholder Wealth

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Abstract

The agents to whom shareholders delegate the management of corporate affairs may transfer value from shareholders to themselves through a variety of mechanisms, such as self-dealing, insider trading, and taking of corporate opportunities. A common view in the law and economics literature is that such value diversion does not ultimately produce a reduction in shareholder wealth, since value diversion simply substitutes for alternative forms of compensation that would otherwise be paid to managers. We question this view within its own analytical framework by studying, in a principal-agent model, the effects of allowing value diversion on managerial compensation and effort. We suggest that the standard law and economics view of value diversion overlooks a significant cost of such behavior. Many common modes of compensation can provide managers with incentives to enhance shareholder value; replacing such compensation would reduce these incentives. As a result, even if the consequences of a rule permitting value diversion can be fully taken into account in setting managerial compensation, such a rule might still produce a reduction in shareholder wealth -- and would not do so only if value diversion would have some countervailing positive effects (a possibility which our model considers) that are sufficiently significant in size.

INTRODUCTION

The agents to whom shareholders delegate the management of the typical large corporation have a variety of opportunities to transfer value from shareholders to themselves. These agents may take business opportunities presented to the firm and turn them to their own advantage; they may engage in classic self-dealing, selling assets to the firm or buying assets from it at non-arms'-length prices; they may trade in the firm's stock on the basis of inside information; or they may provide themselves with various perks not germane to their job responsibilities. Each of these actions provides managers with private benefits that increase the effective level of managerial pay above the level implied by salaries, bonuses, and other forms of direct compensation.

Much of corporate law is addressed to the problem of managerial value diversion in its various incarnations. State and federal rules curtail or regulate the taking of corporate opportunities, transactions between corporations and their managers, insider trading, and the provision of perks and other benefits to managers (Clark, 1986: 166-79, 191-94, 225-30, 293-340). These legal rules reflect a background presumption that value diversion harms shareholders and should be discouraged. On this view, value diversion is undesirable (and appropriately curtailed by legal rules) absent some reason to believe that such behavior produces offsetting gains for shareholders.

A common view in the law and economics literature is that the traditional presumption against managerial value diversion is misguided (Manne, 1966; Manne, 1970; Scott, 1980; Easterbrook and Fischel, 1982; Carlton and Fischel, 1983; Haddock and Macey, 1987; Easterbrook and Fischel, 1991). Many of these authors have argued that value diversion does not raise the distributional and fairness concerns that underlie the traditional disapproval of such

behavior because value diversion is simply an alternative form of managerial compensation, a substitute for salaries, bonuses, and other forms of direct managerial pay. Benefits from value diversion will be offset by reductions in direct compensation, leaving total managerial pay and the total wealth enjoyed by shareholders unchanged (Easterbrook and Fischel, 1982: 707, 734-35; Haddock and Macey, 1987: 1461-62). Value diversion no more hurts shareholders than does payment of salaries, bonuses, and other familiar forms of compensation. Consequently, shareholders have no need for the protective (restrictive) legal rules imposed by current law.

One objection to this benign view of value diversion is that the process by which managers' direct compensation is set does not conform to the hypothetical ideal envisioned by the view's proponents. It may be implausible to assume, as those proponents do, that the level of managerial pay is set by a disinterested agent seeking to maximize share value (Brudney, 1985). The board of directors of the typical large corporation may be partial to managers' interests and therefore reluctant to pursue an aggressive strategy of lowering salaries and other forms of direct compensation in response to managers' ability to divert value from shareholders (a form of transfer that will often occur without shareholders' knowledge). Legal restrictions on value diversion may then be a pragmatic response to the consequences of value diversion in real-world settings.

This paper offers a different objection to the benign view of value diversion. We reexamine that view within its own analytical framework by studying, in a principal-agent model, the effects of allowing value diversion on managerial compensation and managerial effort. Our analysis suggests that the benign view of value diversion overlooks a significant cost of such behavior. This cost justifies the conclusion that value diversion is undesirable unless it produces sufficiently large countervailing benefits.

The cost of value diversion on which we focus results from the relationship between managerial compensation and incentives in a principal-agent setting. The compensation paid to managers in such a setting will typically depend significantly on firm performance. Bonuses, stock options, and other forms of performance-based pay tie managers' fate to shareholders' return. Against this backdrop, reducing managers' compensation to adjust for opportunities for value diversion will mean reducing the alignment of shareholders' and managers' interests. Shareholders are effectively faced with a catch-22: either they reduce managers' compensation in response to opportunities for value diversion and bear the resulting costs of weakened incentives, or they leave compensation alone and enjoy no offsetting adjustment in compensation in response to value diversion.

The dilemma confronting shareholders in this setting may be illustrated with a simple numerical example. Suppose that a manager would receive compensation with an expected value of $300,000 in the absence of value diversion. Imagine that value diversion, if permitted, would impose costs of $200,000 on shareholders and yield benefits of $200,000 to the manager. (Value diversion here is a pure wealth transfer.) If shareholders respond to the prospect of value diversion by reducing the manager's direct compensation by $200,000, then the manager's interests will be less aligned with those of shareholders (assuming that at least some portion of the original compensation package was performance-based). Share value will fall as a result. The adverse effect of adjusting compensation is reduced but not eliminated if direct compensation is decreased by some amount less than $200,000 (say, $100,000); the manager's incentives will still weaken, but by a smaller margin. However, to whatever extent the manager's direct compensation is *not* reduced by the full amount of the value diversion, shareholders will bear the costs of such behavior. Thus, no matter what response shareholders

adopt, they will be worse off with value diversion than without it.

As this simple example illustrates, and as the analysis below shows, in the absence of some countervailing benefit, a rule permitting value diversion will generally reduce share value. Our analysis also models cases in which value diversion will have some beneficial effect on share value. If a particular form of value diversion produces countervailing benefits of a sufficient size, then a rule allowing such behavior may be desirable. But in such cases, our basic message still holds: permitting value diversion imposes a discrete cost on shareholders (one that may or may not be outweighed by countervailing benefits). Accordingly, a rule permitting value diversion will be desirable only if such behavior produces affirmative benefits that outweigh the cost we identify.

For expositive ease, we focus on two polar approaches to value diversion: absolute prohibition and absolute permission. This focus tracks the basic debate between those who support the existing legal regime (which prohibits value diversion except in narrowly defined circumstances) and those who argue that the law's restrictions on value diversion are misguided. Our conclusions, however, would be unaffected by a focus instead on the comparison between a restrictive (though not completely prohibitive) legal regime and a regime in which value diversion is permitted. (A separate comparison, which we do not perform, would be between a prohibitory regime and a regime that restricted, but did not prohibit, value diversion. We choose to focus our analysis on the choice between the existing (largely prohibitory) regime and a regime in which value diversion is permitted because these are the alternatives emphasized by the existing debate.) The fact that we are discussing possible legal regimes does place important limits on the sorts of schemes that may be used to regulate value diversion; schemes under which, for example, the permissibility of value diversion depends on a manager's past

performance obviously could not be implemented as general legal rules.

In analyzing the effects on share value of prohibiting and permitting value diversion, we do not mean to suggest that all forms of value diversion could be successfully controlled by legal rules. Regulating certain forms of value diversion might involve substantial informational and enforcement costs, far greater than any conceivable benefit of a restrictive legal regime. Such forms of value diversion must effectively be taken for granted. In the case of other forms of value diversion, however, legal restrictions are feasible and, indeed, are commonly observed in practice. (Examples include restrictions on self-dealing and on the taking of corporate opportunities.) Of course, existing restrictions on value diversion may be too strict or not strict enough, and our analysis is motivated in part by the desire to shed light on that question.

Whatever the desired rule governing value diversion, there is the question of whether it should be a mandatory rule (one that individual firms cannot choose to opt out of) or a default rule. The general considerations that bear on the choice between mandatory and default rules have been the subject of much debate in the corporate law literature (Bebchuk, 1989a; Bebchuk, 1989b; Easterbrook and Fischel, 1989; Eisenberg, 1989; Gordon, 1989; Easterbrook and Fischel, 1991). We do not attempt to add to that debate here; our focus instead is on whether the substantive rule should be restrictive or permissive in its treatment of value diversion.[1]

Section I of the paper contains our basic model. In order to isolate the cost of value diversion that we identify, we assume in this model that diversion represents a pure wealth transfer between shareholders and managers. Section II discusses situations in which the cost

[1] One familiar argument for allowing opting out is that the optimal treatment of a given issue, such as value diversion, may differ from firm to firm. Indeed, our analysis identifies how the optimal treatment of diversion may depend on certain firm-specific parameters and circumstances. At the same time, allowing opting out may involve costs; for example, it may create the problem of mid-stream opportunism emphasized by Bebchuk (1989a). In this paper we do not attempt to contribute to the existing literature on how to balance these competing factors.

of value diversion may be offset by countervailing benefits. Section III concludes.

I. BASIC MODEL: VALUE DIVERSION AS A PURE WEALTH TRANSFER

A. Framework

The framework for our analysis is the standard principal-agent model, in which the profit earned by the principal (the shareholders of the firm) is a function of the level of effort exerted by the manager who runs the firm. The manager's effort level e is unobservable and, thus, subject to moral hazard. The firm's profit π is "high" ($\pi = \bar{\pi}$) with probability P(e) and "low" ($\pi = \underline{\pi}$) with probability 1 - P(e), where P(e) is increasing and concave in e ($P' \geq 0$, $P'' < 0$). (To ensure an interior solution, we also impose the technical conditions that $\lim_{e \to -\infty} P'(e) = \infty$ and $\lim_{e \to -\infty} -P''(e) < \infty$.) The manager is risk-neutral but wealth-constrained; in particular, we assume that the manager's pay must be at least S_0 whatever the firm's profit level.[2] The manager has reservation wage W ($> S_0$) and objective function

$$P(e)\bar{I} + (1 - P(e))\underline{I} - e,$$

where $\bar{I}$ is the compensation paid to the manager when the firm's profit is high, $\underline{I}$ is the compensation paid to the manager when the firm's profit is low, and e is the cost of the manager's effort in dollar terms. We denote $\underline{I}$ by S; $\bar{I}$ may then be written as $S + \alpha\Delta_\pi$, where Δ_π is the difference between the high and low profit levels for the firm ($\Delta_\pi = \bar{\pi} - \underline{\pi}$) and α is the manager's share of that difference. A managerial contract in our model is therefore a pair (S, α), where S may be viewed as the manager's salary -- the amount paid to the manager regardless of how the firm does -- and α may be viewed as the profit-sharing component of the

[2] Jolls (1995: ch. 3) considers the case of a non-wealth-constrained but risk-averse manager.

compensation scheme or, equivalently, the degree to which the manager shares in the firm's gain in moving from low to high profit.

Our addition to the standard principal-agent framework is the prospect of value diversion by the manager. In our model, the manager not only influences the likelihood that the firm realizes the high profit level ($\bar{\pi}$) but also may enjoy some control over how much of the firm's profit actually finds its way into shareholders' hands. Specifically, we imagine that with probability θ ($0 < \theta < 1$) the manager is able to divert an amount X of the firm's profit. The probabilistic nature of the value diversion opportunity in our model reflects the characteristic uncertainty of gains from value diversion (Scott, 1980: 808). The transfer of X is a pure wealth transfer from shareholders to the manager; as noted above, we focus initially on this case to isolate the cost of permitting value diversion.

The normative perspective on which we focus is the perspective of maximizing ex ante share value. This is the perspective that those who set up a firm and take it public would adopt; they would want value diversion to be prohibited or permitted according to whether it decreased or increased the initial value of the firm. The focus on ex ante share value is consistent with the normative orientation of the existing law and economics literature on value diversion (see, for example, Easterbrook and Fischel, 1982). In Bebchuk and Jolls (1996), we analyze the effects of value diversion on the total wealth of the shareholder-manager unit and on the compensation received by the manager.

The first-best outcome in our model is achieved when the manager's effort level e maximizes the expected benefit of effort, $P(e)\bar{\pi} + (1 - P(e))\underline{\pi}$, minus the cost of effort, e. We assume that the difference between the expected benefit and the expected cost of effort at the first-best effort level e^{FB} is greater than or equal to the reservation wage W (formally, $P(e^{FB})\bar{\pi} + (1 - P(e^{FB}))\underline{\pi} - e^{FB} \geq W$); otherwise hiring the manager could never be profitable. We further assume that the benefit-cost difference at the first-best effort level is greater than or equal to $W - S_0$ (formally, $P(e^{FB})\bar{\pi} + (1 - P(e^{FB}))\underline{\pi} - e^{FB} \geq W - S_0$); this condition follows directly from the prior one if S_0 (the minimum wealth level for the manager) is non-negative. In the first-best environment, the division of surplus between the shareholders and the manager is then determined by the levels of S and α.

In a second-best world, it is not possible to both ensure the choice of the first-best level of effort and maintain complete freedom to adjust the manager's salary and profit share as distributional considerations dictate. As a result of the link between managerial compensation and incentives, value diversion may have significant effects on ex ante share value.

B. Optimal Managerial Contract When Value Diversion Is Prohibited

When value diversion is prohibited, ex ante share value is the difference between the firm's expected profit, $\underline{\pi} + P(e)\Delta_x$, and the compensation owed to the manager. The contract design problem involves maximizing ex ante share value subject to incentive compatibility (IC), participation (P), and minimum wealth (MW) constraints for the manager:

$$\begin{aligned} \max_{e,S,\alpha} \quad & \{ \underline{\pi} + P(e)\Delta_x - S - P(e)\alpha\Delta_x \} \\ \text{s.t.} \quad & \text{(IC) } e \in \operatorname{argmax} \{ S + P(e)\alpha\Delta_x - e \}; \\ & \text{(P) } S + P(e)\alpha\Delta_x - e \geq W; \\ & \text{(MW) } S \geq S_0. \end{aligned} \tag{1}$$

Under standard technical conditions ($\lim_{e \to -\infty} P'(e) = \infty$ and $\lim_{e \to -\infty} -P''(e) < \infty$), a solution to this problem will involve a profit share α between 0 and 1. In turn, $\alpha > 0$ implies that the

incentive compatibility constraint reduces to the first-order condition $P'(e)\alpha\Delta_x - 1 = 0$, or, equivalently, $e = e(\alpha)$, where $e(\alpha)$ is the effort level defined by the first-order condition. The problem in (1) therefore simplifies to

$$\begin{aligned} \max_{S,\,\alpha} \quad & \{ \pi + P(e(\alpha))\Delta_x - S - P(e(\alpha))\alpha\Delta_x \} \\ \text{s.t.} \quad & S + P(e(\alpha))\alpha\Delta_x - e(\alpha) \geq W; \\ & S \geq S_0. \end{aligned} \tag{2}$$

The function $e(\alpha)$ is increasing in α ($de/d\alpha = -P'(e(\alpha))/P''(e(\alpha))\alpha > 0$); intuitively, higher values of α increase the manager's payoff from working hard and, hence, increase the manager's optimal effort choice.

A managerial contract (S, α) that solves the problem in (2) must involve paying as much of the manager's compensation as possible in the form of profit sharing. Profit-based compensation encourages managerial effort, whereas straight salary payments do not. In our model, if the salary S exceeded the minimum level S_0, then S could be lowered, and α raised, without violating either the participation constraint or the minimum wealth constraint, and this change would increase ex ante share value. In turn, $S = S_0$ implies that the optimal profit share α maximizes the objective function in (2) subject to the participation constraint. The participation constraint (with $S = S_0$) is satisfied for all α above a threshold value $\hat{\alpha}$ defined by

$$S_0 + P(e(\hat{\alpha}))\hat{\alpha}\Delta_x - e(\hat{\alpha}) = W.$$

It follows that the optimal share α is given by the unconstrained maximand α^* of the objective function in (2) if that value satisfies the participation constraint and by the minimum value that satisfies the participation constraint otherwise:

$$\begin{Bmatrix} \alpha^* & \text{if } \alpha^* \geq \hat{\alpha} \\ \hat{\alpha} & \text{otherwise} \end{Bmatrix}.$$

Thus, either the manager is paid more than the reservation wage to induce high effort ($\alpha = \alpha^*$), or the manager's profit share is the minimum share permitted by the managerial participation constraint ($\alpha = \hat{\alpha}$).

C. Optimal Managerial Contract When Value Diversion Is Permitted

We now characterize the optimal managerial contract when value diversion is permitted. The contract design problem in that circumstance is:

$$\begin{aligned} \max_{e,S,\alpha} \quad & \{ \pi + P(e)\Delta_x - S - P(e)\alpha\Delta_x - \theta X \} \\ \text{s.t.} \quad & \text{(IC) } e \in \operatorname{argmax} \{ S + P(e)\alpha\Delta_x - e + \theta X \}; \\ & \text{(P) } S + P(e)\alpha\Delta_x - e + \theta X \geq W; \\ & \text{(MW) } S \geq S_0. \end{aligned} \tag{3}$$

The only difference from the problem in (1) is that the shareholders now get θX less, and the manager θX more, on an expected basis. These differences in payoffs reflect the prospect of value diversion by the manager. Note that the minimum wealth constraint for the manager does not change; this is due to the fact that value diversion benefits are probabilistic and, thus, cannot help to satisfy the minimum wealth constraint.

Because the problem in (3) differs from the problem in (1) only by constant terms in the objective function and the incentive compatibility and managerial participation constraints, a solution to (3) must have $e = e(\alpha)$, $S = S_0$, and α given by

$$\begin{Bmatrix} \alpha^* & \text{if } \alpha^* \geq \tilde{\alpha} \\ \tilde{\alpha} & \text{otherwise} \end{Bmatrix},$$

where $\tilde{\alpha}$ is the minimum profit share permitted by the managerial participation constraint (with $e = e(\alpha)$ and $S = S_0$) when value diversion is permitted:

$$\tilde{\alpha} = \text{minimum } \alpha \ (\geq 0) \text{ such that } S_0 + P(e(\alpha))\alpha\Delta_x - e(\alpha) + \theta X \geq W.$$

The minimum profit share $\tilde{\alpha}$ is less than the minimum profit share when value diversion is prohibited because the addition of θX to the manager's compensation when value diversion is permitted reduces the profit share needed to bring the manager up to the reservation wage W. Just as when value diversion is prohibited, the optimal managerial share must be non-negative, so if the minimum profit share $\tilde{\alpha}$ is 0, then the optimal managerial share must be α^*.

D. Effect of Value Diversion on Ex Ante Share Value

Our characterization of the optimal managerial contract without and with value diversion permits us to assess the competing claims about value diversion and ex ante share value described in the introduction. Proposition 1 shows that value diversion necessarily reduces ex ante share value in a principal-agent framework when diversion operates as a pure wealth transfer from shareholders to managers.

Proposition 1: When value diversion is a pure wealth transfer, permitting such behavior reduces ex ante share value.

Proof: It is useful to distinguish three cases, based on the relationship between α^*, $\hat{\alpha}$, and $\tilde{\alpha}$. The cases considered below exhaust the set of possibilities because, as noted above, $\tilde{\alpha} < \hat{\alpha}$.

Case 1: $\alpha^* < \tilde{\alpha} < \hat{\alpha}$. In this case the optimal managerial contract has $\alpha = \hat{\alpha}$ when value diversion is prohibited and $\alpha = \tilde{\alpha}$ (> 0, since otherwise $\tilde{\alpha}$ could not be optimal) when value diversion is permitted. Substituting from the managerial participation constraint, ex ante

share value is $\underline{\pi} + P(e(\hat{\alpha}))\Delta_x - W - e(\hat{\alpha})$ when value diversion is prohibited and $\underline{\pi} + P(e(\tilde{\alpha}))\Delta_x - W - e(\tilde{\alpha})$ when value diversion is permitted. The change in ex ante share value with a move from forbidding to permitting value diversion is therefore given by

$$[P(e(\tilde{\alpha}))\Delta_x - e(\tilde{\alpha})] - [P(e(\hat{\alpha}))\Delta_x - e(\hat{\alpha})]. \tag{4}$$

This expression is negative, as $e(\tilde{\alpha}) < e(\hat{\alpha})$, $d(P(e)\Delta_x - e)/de > 0$ for $e < e^{FB}$, and $e(\alpha) < e^{FB}$ for all $\alpha < 1$, where e^{FB} is the first-best effort level defined above. So ex ante share value is lower in the presence of value diversion than in its absence.

Case 2: $\tilde{\alpha} \leq \alpha^* < \hat{\alpha}$. Here the optimal managerial contract has $\alpha = \hat{\alpha}$ when value diversion is prohibited and $\alpha = \alpha^*$ when it is permitted. Ex ante share value is the same as in case 1 when value diversion is prohibited and (since the managerial participation constraint may be slack when value diversion is permitted) is less than or equal to $\underline{\pi} + P(e(\alpha^*))\Delta_x - W - e(\alpha^*)$ when value diversion is permitted. The change in ex ante share value with a move from forbidding to permitting value diversion is therefore less than or equal to the difference in (4) with $\tilde{\alpha} = \alpha^*$. That difference is negative (as $\alpha^* < \hat{\alpha}$), so ex ante share value is again lower in the presence of value diversion than its absence.

Case 3: $\tilde{\alpha} < \hat{\alpha} \leq \alpha^*$. In this case the optimal managerial contract has $\alpha = \alpha^*$ when value diversion is prohibited and also when it is permitted. Since managerial compensation is not adjusted at all with a move from forbidding to permitting value diversion, ex ante share value falls by θX (the expected cost of value diversion to shareholders) with such a move.

Remarks: (1) *Intuition*. Proposition 1 shows that value diversion reduces ex ante share value in spite of shareholders' ability to adjust the manager's direct compensation in response. The

intuition for this result is that adjusting managerial compensation to offset profits from value diversion imposes costs on shareholders due to the incentive effects of such adjustments. If direct compensation could be adjusted by lowering the manager's salary, then managerial incentives would not be affected. However, the manager's salary will already be at the minimum feasible level (S_0) under an optimal managerial contract without value diversion; further decreases are not possible. Adjusting the manager's direct compensation therefore requires lowering the profit share α, as occurs whenever $\alpha^* < \hat{\alpha}$ in our model (cases 1 and 2 above). Lowering the profit share lowers the level of effort that the manager will exert, which adversely affects ex ante share value. Lowering α may in fact be so costly that shareholders prefer not to do it; this is the case when $\alpha^* \geq \hat{\alpha}$ in our model (case 3 above). If α is not adjusted to offset profits from value diversion, then managerial incentives remain at their previous level, but ex ante share value falls by the full amount θX diverted by the manager.

(2) *Possibility of "financing" of value diversion by manager.* One might ask whether, in the presence of a rule permitting value diversion, the shareholders might respond by providing for a fixed salary of S_0 if the opportunity to divert value did not arise (an event with probability $1 - \theta$) and a fixed salary of $S_0 - X$ if the opportunity to divert value did arise (an event with probability θ). In this case the effective level of guaranteed compensation would be S_0 whether or not value diversion turned out to be feasible; the situation would thus be no different from when value diversion is prohibited. (In particular, there would no longer be a need to distort α in response to the opportunity for value diversion.) This scenario amounts to managerial "financing" of the value diversion opportunity; the manager is "loaned" X by the firm and must repay it if but only if the opportunity for diversion arises.

To the extent that such financing is possible, shareholders may be able to avoid the

incentive costs of value diversion identified by Proposition 1 by opting out of the unfavorable rule that permits such behavior. This possibility does not, however, make the choice between prohibiting and permitting value diversion irrelevant. The financing scheme requires an enforcement mechanism by which shareholders can determine whether value diversion has occurred. Such a mechanism will typically be very costly for shareholders of an individual firm to set up. Because there will often be substantial economies of scale in detecting value diversion (for instance, in the case of insider trading), a general legal rule is likely to be superior to firm-by-firm enforcement.

E. Magnitude of the Value Diversion Effect

We now relate the magnitude of the fall in ex ante share value with value diversion to the amount of the firm's profit that the manager is able to divert.

Proposition 2: When value diversion is a pure wealth transfer, the reduction in ex ante share value with value diversion is an increasing function of the expected transfer θX.

Proof: Suppose first that $\tilde{\alpha} \leq \alpha^*$ (cases 2 and 3 in the proof of proposition 1). An increase in θX then has no effect on the optimal managerial contract when value diversion is permitted, as the manager's profit share is already given by α^* rather than by the minimum share needed to satisfy the managerial participation constraint. An increase in θX obviously has no effect on the optimal managerial contract when value diversion is prohibited, so the change in ex ante share value with a move from forbidding to permitting value diversion is

$$P(e(\alpha'))(1 - \alpha')\Delta_x - \theta X - P(e(\hat{\alpha}'))(1 - \hat{\alpha}')\Delta_x,$$

where $\hat{\alpha}' = \max <\alpha^*, \hat{\alpha}>$ is the manager's profit share under an optimal managerial contract

when value diversion is prohibited. It follows that as θX increases, the change in ex ante share value when value diversion is permitted falls (becomes more negative).

Suppose now that $\tilde{\alpha} > \alpha^*$ (case 1 above); the managerial participation constraint now binds when value diversion is permitted, so increasing θX reduces the manager's profit share under an optimal managerial contract (either to a new value of $\tilde{\alpha}$ or to the unconstrained maximand α^*). Substituting from the managerial participation constraint when value diversion is prohibited and when it is permitted, the change in ex ante share value with a move from forbidding to permitting value diversion is less than or equal to

$$[P(e(\tilde{\alpha}'))\Delta_x - e(\tilde{\alpha}')] - [P(e(\hat{\alpha}))\Delta_x - e(\hat{\alpha})],$$

where $\tilde{\alpha}' = \max <\alpha^*, \tilde{\alpha}>$ is the manager's profit share under an optimal managerial contract when value diversion is permitted. This difference gets smaller (equivalently, more negative) as $\tilde{\alpha}'$ shrinks, which will occur with a rise in θX.

II. ADDITIONAL EFFECTS OF PERMITTING VALUE DIVERSION

In the model developed in section I, value diversion was assumed to represent a pure wealth transfer from shareholders to managers. This assumption permits us to highlight a cost of value diversion that we wish to emphasize: its effects (in a principal-agent framework) on managerial compensation and, as a consequence, managerial incentives. In this section we address the possibility that value diversion may have additional effects on value. We consider two examples of such effects: first, value diversion may produce benefits for managers that exceed or fall short of the direct costs to shareholders; and second, value diversion may affect

managers' incentives to exert effort on behalf of the firm.[3] In light of the cost of value diversion identified in section I, these additional effects of diversion must be positive in sign and of sufficient magnitude if permitting value diversion is to enhance ex ante share value. Indeed, we show that in some cases value diversion will reduce ex ante share value regardless of the magnitude of any countervailing positive effects.

A. Managerial Benefits of Value Diversion Differ from Shareholders' Costs

In some settings, value diversion may produce benefits to managers that either exceed or fall short of the direct costs of such behavior to shareholders. For example, Easterbrook and Fischel (1982: 706-07) argue that permitting managers to take business opportunities of the firm may enhance the value of such opportunities because their value is higher in managers' hands than in the hands of shareholders. To analyze such scenarios, we modify the model of section I by assuming that the benefits of value diversion to managers are $X + M$ rather than X, where M (the difference between the benefits to managers and the direct costs to shareholders) may be positive or negative. (X continues to represent the direct costs of value diversion to shareholders.) We show that permitting value diversion reduces ex ante share value unless M is positive and exceeds a threshold level identified by our analysis. We also show that permitting value diversion reduces ex ante share value regardless of the sign and magnitude of M if the manager is paid more than the reservation wage W to induce managerial effort when value diversion is prohibited.

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[3] Talley (1998) considers another possibility: that value diversion -- specifically, the taking of corporate opportunities -- may occur against the backdrop of informational asymmetries between managers and shareholders about the profitability of such opportunities. Talley employs a "hidden information" model (in contrast to our "hidden action" model, which emphasizes the standard problem of managerial incentives to exert effort) to analyze such scenarios. Talley's analysis, like ours, suggests that legal restrictions on the taking of corporate opportunities may be desirable.

1. Participation Constraint Is Binding When Value Diversion Is Prohibited

We begin by considering the case in which the manager is not paid more than the reservation wage when value diversion is prohibited; the managerial participation constraint binds under an optimal managerial contract. This case corresponds to cases 1 and 2 in the proof of Proposition 1 ($\alpha^* < \hat{\alpha}$).

Proposition 3. If the managerial participation constraint binds under an optimal managerial contract when value diversion is prohibited, then permitting value diversion reduces ex ante share value if the difference M between the benefits of such behavior to the manager and the direct costs of the behavior to shareholders satisfies

$$M < \{[P(e(\hat{\alpha}))\Delta_x - e(\hat{\alpha})] - [P(e(\tilde{\alpha}'))\Delta_x - e(\tilde{\alpha}')]\}/\theta, \qquad (5)$$

where $\tilde{\alpha}' = \max <\alpha^*, \tilde{\alpha}>$.

Proof. Since the managerial participation constraint binds under an optimal managerial contract when value diversion is prohibited, the manager's profit share is $\alpha = \hat{\alpha}$, and ex ante share value is $\underline{\pi} + P(e(\hat{\alpha}))\Delta_x - W - e(\hat{\alpha})$, in that circumstance. Meanwhile, when value diversion is permitted, the manager's profit share is $\alpha = \tilde{\alpha}'$, and ex ante share value is less than or equal to $\underline{\pi} + P(e(\tilde{\alpha}'))\Delta_x - W - e(\tilde{\alpha}') + \theta M$. Therefore, a sufficient condition for lower ex ante share value when value diversion is permitted than when it is prohibited is

$$P(e(\tilde{\alpha}'))\Delta_x - e(\tilde{\alpha}') + \theta M < P(e(\hat{\alpha}))\Delta_x - e(\hat{\alpha}).$$

Rearranging this inequality yields the condition in (5).

Remark. The intuition for this result is as follows. If the managerial participation constraint binds under an optimal managerial contract when value diversion is prohibited, then moving to

an environment in which such behavior is permitted induces shareholders to reduce the degree of managerial profit sharing (measured by α) to either α^* or $\tilde{\alpha}$. This reduction drives managerial effort further away from the first best level e^{FB}. If the cost of the reduction in effort exceeds the gain to the shareholder-manager unit from permitting value diversion (given by θM), then ex ante share value will necessarily fall. The condition that the cost of the reduction in effort exceed the gain from permitting value diversion is precisely the condition in (5). This condition is sufficient (although not necessary) for a fall in ex ante share value. Since $\hat{\alpha} > \tilde{\alpha}'$, the right-hand side of (5) is positive, implying that M must be not only positive but also sufficiently large in magnitude to outweigh the cost of permitting value diversion that we identify.

2. Participation Constraint Is Not Binding When Value Diversion Is Prohibited

We now consider the case in which the managerial participation constraint does not bind under an optimal managerial contract when value diversion is prohibited. Here the manager is paid more than the reservation wage to induce managerial effort. This case corresponds to case 3 in the proof of Proposition 1.

Proposition 4. If the managerial participation constraint does not bind under an optimal managerial contract when value diversion is prohibited, then permitting value diversion always reduces ex ante share value.

Proof. If the managerial participation constraint does not bind under an optimal managerial contract when value diversion is prohibited, then the manager's profit share when value diversion is prohibited is $\alpha = \alpha^*$, which implies $\alpha^* \geq \hat{\alpha}$ and, hence, $\alpha^* > \tilde{\alpha}$. The manager's profit share under an optimal managerial contract when value diversion is permitted is therefore

$\alpha = \alpha'$ as well. The difference in ex ante share value between the environment in which value diversion is permitted and the environment in which it is prohibited is thus $-\theta X$, which is always negative.

Remark. Intuitively, when managers are paid more than their reservation wage to induce them to exert effort on shareholders' behalf, permitting value diversion causes no adjustment in their direct compensation. Ex ante share value therefore falls by the full expected transfer θX, regardless of the existence or magnitude of any benefits from value diversion.

B. Interaction Between Value Diversion and Productive Activity

The preceding subsection showed that value diversion may reduce ex ante share value even when the direct costs of the behavior to shareholders are less than its benefits to managers. Another potential effect of value diversion is its effect on managerial incentives to engage in productive activity. Value diversion may affect these incentives not only indirectly through its effect on the optimal managerial contract (our focus in section I), but also directly. One possibility is that diversion may encourage managers to exert higher levels of effort on behalf of the firm -- for example, by finding and taking on new projects that enhance firm value.[4] Diversion would have this effect if the amount of the firm's profit that managers could divert were an increasing function of their effort level: $X = X(e)$ in our model, with $X' > 0$. Another possibility is that diversion encourages managers to exert *less* effort on behalf of the firm; this would occur if productive activity and value diversion represented competing pressures on managers' time. Clearly, in this latter case, permitting value diversion would reduce ex ante

[4] We thank Tracy Lewis and an anonymous referee for suggesting this point to us.

share value, for not only would it produce the effect identified in section I, but also it would result in managers' having a direct incentive to reduce effort (in order to increase the amount of value diverted from the firm).

With $X'(e) > 0$, permitting value diversion may either decrease or increase ex ante share value. Intuitively, permitting diversion substitutes compensation though the value-diverting activity for compensation through conventional modes of incentive pay. Since compensation through the value-diverting activity -- like compensation through conventional modes of incentive pay -- encourages managerial effort, the critical question becomes which device is a more effective means of encouraging effort. If conventional incentive compensation is more effective, then permitting value diversion will tend to decrease ex ante share value, whereas if compensation through the value-diverting activity is more effective, then permitting that activity will tend to increase ex ante share value.[5] The first of these scenarios is most likely if X' (which measures the degree of relationship between effort level and value diversion) is small and P' (which measures the degree of relationship between effort level and the firm's profit) is large; the second is most likely if X' is large and P' is small.

To examine these effects formally, we consider the case examined in Proposition 3 above, in which the managerial participation constraint binds under an optimal managerial

[5] The case in which compensation through the value-diverting activity is a more effective means of encouraging effort than compensation through conventional incentive pay is related to the analysis of Noe (1997). In Noe's model, a controlling shareholder contracts with a manager in a principal-agent setting; value diversion in the form of insider trading is a possibility. Noe shows that it may be in the controlling shareholder's interest to permit insider trading, for two reasons. First, "managerial payoffs from insider trading are not necessarily paid by the controlling shareholder . . . . Rather they may come at the expense of uninformed liquidity traders submitting orders based on portfolio diversification considerations" (1997: 290). Because we focus on the wealth of shareholders as a group rather than the wealth of a controlling shareholder, this sort of argument would seem not to apply to our analysis. Second, Noe finds that there is an incentive for substitution of compensation through insider trading profits for compensation through conventional incentive pay because the former is a "cheaper" way of compensating the manager; this argument seems very similar to our suggestion that if compensation through the value-diverting activity is more effective than compensation through traditional incentive pay in encouraging managerial effort, then permitting value diversion may enhance share value.

contract when value diversion is prohibited. When value diversion is permitted, the contract design problem with $X = X(e)$ is given by (3) (substituting $X(e)$ for X). The optimal managerial share α when value diversion is permitted will be between 0 and 1 if (i) $X'(e) < 1/\theta$ for all e; and (ii) X'' satisfies the conditions imposed on P'' (see section I.A). With $\alpha > 0$, the incentive compatibility constraint for the manager may be written as $e = \underline{e}(\alpha)$, where $\underline{e}(\alpha)$ is defined by the first-order condition

$$P'(\underline{e}(\alpha))\alpha\Delta_{\pi} + \theta X'(\underline{e}(\alpha)) - 1 = 0.$$

The contract design problem when value diversion is permitted thus reduces to the problem of maximizing ex ante share value subject to participation and minimum wealth constraints, all with $e = \underline{e}(\alpha)$. By reasoning analogous to that in sections I.B and I.C, an optimal managerial contract in this setting must have $S = S_0$, and in turn the optimal managerial share α is given by

$$\left\{ \begin{array}{ll} \underline{\alpha}^* & \textit{if } \underline{\alpha}^* \geq \tilde{\underline{\alpha}} \\ \tilde{\underline{\alpha}} & \textit{otherwise} \end{array} \right\},$$

where $\underline{\alpha}^*$ is the unconstrained maximand of the objective function in the contract design problem when value diversion is permitted, and $\tilde{\underline{\alpha}}$ is the minimum profit share permitted by the managerial participation constraint (with $e = \underline{e}(\alpha)$ and $S = S_0$) when value diversion is permitted:

$$\tilde{\underline{\alpha}} = \text{minimum } \alpha\ (\geq 0) \text{ such that } S_0 + P(\underline{e}(\alpha))\alpha\Delta_{\pi} - \underline{e}(\alpha) + \theta X(\underline{e}(\alpha)) \geq W.$$

($\underline{\alpha}^*$ and $\tilde{\underline{\alpha}}$ are simply the counterparts (for $X=X(e)$) to α^* and $\tilde{\alpha}$ in section I.C.)

The proposition to follow gives a sufficient condition for value diversion to reduce ex ante share value when the managerial participation constraint binds under an optimal managerial contract when value diversion is prohibited:

Proposition 5. If the managerial participation constraint binds under an optimal managerial contract when value diversion is prohibited, then permitting value diversion reduces ex ante share value if the function $X(e)$ satisfies the following condition:

$$X'(e(\hat{\alpha})) < P'(e(\hat{\alpha}))(\hat{\alpha} - \tilde{\underline{\alpha}}')\Delta_{\pi}/\theta, \tag{6}$$

where $\tilde{\underline{\alpha}}' = \max \langle \underline{\alpha}^*, \tilde{\underline{\alpha}} \rangle$.

Proof. The optimal managerial contract has $\alpha = \hat{\alpha}$ when value diversion is prohibited (since the managerial participation constraint binds) and $\alpha = \tilde{\underline{\alpha}}'$ when value diversion is permitted. Substituting from the managerial participation constraint, ex ante share value is $\underline{\pi} + P(e(\hat{\alpha}))\Delta_{\pi} - W - e(\hat{\alpha})$ when value diversion is prohibited and is less than or equal to $\underline{\pi} + P(\underline{e}(\tilde{\underline{\alpha}}'))\Delta_{\pi} - W - \underline{e}(\tilde{\underline{\alpha}}')$ when value diversion is permitted. Therefore, the change in ex ante share value with a move from forbidding to permitting value diversion is less than or equal to

$$[P(\underline{e}(\tilde{\underline{\alpha}}'))\Delta_{\pi} - \underline{e}(\tilde{\underline{\alpha}}')] - [P(e(\hat{\alpha}))\Delta_{\pi} - e(\hat{\alpha})].$$

This expression will be negative if $\underline{e}(\tilde{\underline{\alpha}}') < e(\hat{\alpha})$, since $d(P(e)\Delta_{\pi} - e)/de > 0$ for $e < e^{FB}$ (where e^{FB} is the first-best effort level defined above); $e(\hat{\alpha}) < e^{FB}$ (as $\hat{\alpha} < 1$); and $\underline{e}(\tilde{\underline{\alpha}}') < e^{FB}$ (as $\underline{e}(\tilde{\underline{\alpha}}') < e(\hat{\alpha})$ by the condition just imposed). The condition that $\underline{e}(\tilde{\underline{\alpha}}') < e(\hat{\alpha})$ in turn will hold if the derivative of the manager's objective function when value diversion is permitted is negative at $e = e(\hat{\alpha})$ (meaning that $\underline{e}(\tilde{\underline{\alpha}}')$ must be less than $e(\hat{\alpha})$):

$$P'(e(\hat{\alpha}))\tilde{\underline{\alpha}}'\Delta_{\pi} + \theta X'(e(\hat{\alpha})) - 1 < 0.$$

Substituting using the first-order condition for the manager when value diversion is forbidden ($P'(e(\hat{\alpha}))\hat{\alpha}\Delta_{\pi} = 1$) and rearranging terms yields the condition in (6).

Remark. The intuition for the result in Proposition 5 is that when X' is small and P' is large,

conventional incentive compensation tends to be a more effective means of encouraging managerial effort than compensation through the value-diverting activity. Thus, permitting value diversion in this circumstance will result in the substitution of a less effective means of encouraging effort for a more effective means of doing so. As a consequence, ex ante share value will tend to fall if value diversion is permitted rather than prohibited.

Note that if $\underline{\alpha}^* < \tilde{\underline{\alpha}}$, so that the manager's share $\tilde{\underline{\alpha}}'$ under the optimal managerial contract when value diversion is permitted is $\tilde{\underline{\alpha}}$, then the right-hand side of (6) is necessarily positive. This is so because a smaller managerial share α is necessary to satisfy the managerial participation constraint when value diversion is permitted than when it is prohibited: $\tilde{\underline{\alpha}} < \hat{\alpha}$. If, however, $\underline{\alpha}^* \geq \tilde{\underline{\alpha}}$, so that the manager's share under the optimal managerial contract when value diversion is permitted is $\underline{\alpha}^*$, then the right-hand side of (6) will be positive if and only if $\underline{\alpha}^* < \hat{\alpha}$.

III. CONCLUSION

A common view in the law and economics literature is that managerial benefits from value diversion will be offset by reductions in direct compensation, leaving total managerial pay and the total wealth enjoyed by shareholders unchanged. We question this view. Our analysis has shown that within the standard principal-agent framework, permitting value diversion imposes a cost on shareholders that may reduce ex ante share value. For value diversion nonetheless to increase ex ante share value, the countervailing positive effects of such behavior (if any) must be sufficiently large to outweigh the cost we identify. The cost of value diversion emphasized here should be taken into account in designing the legal rules governing this behavior.

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