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SECURITIES LAWS AND THE SOCIAL COSTS OF "INACCURATE" STOCK PRICES

MARCEL KAHAN*

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* Assistant Professor of Law, New York University School of Law. I would like to thank Lucian Bebchuk, Vicki Been, Chris Eisgruber, Andrea Fastenberg, Ron Gilson, Jeff Gordon, Joe Grundfest, Bob Hillman, Louis Kaplow, Mike Klausner, Lewis Kornhauser, Reinier Kraakman, Nancy Morawetz, Mitch Polinsky, Hal Scott, Steven Shavell, George Sorter, Bruce Tuckman, Paul Wachtel, Bill Wang, and the participants in Law and Economics Workshops at Harvard and Stanford for their helpful comments. I would also like to acknowledge the financial assistance from the Filomen D'Agostino and Max E. Greenberg Research Fund and the John M. Olin Foundation.

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INTRODUCTION

The issuance and trading of stocks is governed by several federal¹ and state² statutes, rules and regulations promulgated by the Securities and Exchange Commission (SEC),³ the Federal Reserve Board,⁴ stock exchanges,⁵ and state agencies,⁶ and a variety of other regulatory utterances such as no-action letters⁷ and SEC releases.⁸ This vast legal framework has given rise to legions of lawyers, accountants, investment bankers, regulators, and support forces who seek to achieve compliance with these laws. The compliance effort⁹ is rationalized, to a significant degree, by one principal goal of securities laws:¹⁰ to create stock markets in which the market price of a stock corresponds to its fundamental value.¹¹

1. See, e.g., 15 U.S.C. §§ 77a-80c-3 (1988).

2. See generally 1 LOUIS LOSS & JOEL SELIGMAN, SECURITIES REGULATION 29-152 (3d ed. 1989) (summarizing state regulations of securities).

3. See, e.g., 17 C.F.R. §§ 230.100-904 (1991) (rules and regulations promulgated under the Securities Act of 1933); *id.* §§ 240.0-01 to .31-1 (rules and regulations promulgated under the Securities Exchange Act of 1934).

4. See, e.g., 12 C.F.R. §§ 207.1-.112 (1991) (Regulation G); *id.* §§ 220.1-.131 (Regulation T).

5. See, e.g., 2 N.Y.S.E. Guide (CCH) ¶¶ 2001-2905 (Dec. 1991) (New York Stock Exchange rules).

6. See, e.g., FLA. ADMIN. CODE ANN. r. 3E-100.001 to -800.005 (1990); N.Y. COMP. CODES R. & REGS. tit. 13, §§ 10.1-21.7 (1991); 64 PA. CODE §§ 101-1001.010 (1991).

7. See, e.g., American Elec. Power Co., SEC No-Action Letter, [1981 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 76,741, at 77,050 (May 19, 1980) (regarding Rule 16a-11).

8. See, e.g., Interpretive Release on Rules Applicable to Insider Reporting and Trading, Exchange Act Release No. 18,114, 23 S.E.C. Docket 856 (Sept. 24, 1981) (regarding Rule 16b-5).

9. For a discussion of some of the compliance costs, see HOMER KRIPKE, THE SEC AND CORPORATE DISCLOSURE: REGULATION IN SEARCH OF A PURPOSE 107-16 (1979).

10. I will use the term "securities laws" to refer to all the governmental and private regulations of securities and stock markets mentioned above.

11. See, e.g., *Basic, Inc. v. Levinson*, 485 U.S. 224, 246 (1988) (finding that the purpose of securities regulation is to facilitate investors' reliance on integrity of stock markets); H.R. REP. NO. 1383, 73d Cong., 2d Sess. 11 (1934) (stating that market regulation is meant to assure that market price reflects as nearly as possible the just price for the security); *cf.* Jeffrey N. Gordon & Lewis A. Kornhauser, *Efficient Markets, Costly Information, and Securities Research*, 60 N.Y.U. L. REV. 761, 802 (1985) (arguing that goal of securities laws is to enhance stock price accuracy). By "fundamental value," I mean the best estimate at any time, and given all information available at such time, of the discounted value of all distributions (such as dividends, liquidation, and merger distributions) accruing to a stockholder who continues to hold the stock. I refer to a stock price that equals the stock's fundamental value as accurate. To be sure, the goal of absolutely accurate stock prices has been, and will remain, elusive. See generally Sanford J. Grossman & Joseph E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70 AM. ECON. REV. 393 (1980). Most studies show, however, that stock prices are in many respects reasonably accurate. For an overview of economic studies on stock price accuracy and market efficiency, see THOMAS E. COPELAND & J. FRED WESTON, *FINANCIAL THEORY AND CORPORATE POLICY* 361-93 (3d ed. 1988); Eugene F. Fama, *Efficient Capital Markets: II*, 46 J. FIN. 1575 (1991). Of course, securities laws also serve aims other than stock price accuracy. See, e.g., Securities Exchange Act of 1934, § 2, 15 U.S.C. § 78b (1988) (stating that securities laws are meant to remove impediments to a national market

Commentators, however, have largely failed to provide a systematic analysis of the purposes served by accurate stock prices.¹² Most have either disregarded the issue¹³ or asserted, in broad and general terms, that stock price accuracy results in an efficient allocation of capital.¹⁴ Yet despite this lack of analysis, a notion pervades the academic literature that accurate stock prices are highly desirable and that attaining them justifies a major regulatory effort.

Moreover, commentators have almost completely disregarded distinctions between the different ways in which stock prices may be inaccurate.¹⁵ But differentiating between kinds of inaccuracies is of great importance for two reasons. First, any legal rule will remove only specific kinds of inaccuracies. Second, the benefits derived from more accurate stock prices depend significantly on the kind of inaccuracy that is removed.¹⁶

system for securities, to facilitate settlement of securities transactions, to protect the national credit and federal taxing power, and to insure maintenance of honest markets).

12. Stock markets in which stock prices accurately reflect information are commonly referred to as efficient. See Eugene F. Fama, *Efficient Capital Markets: A Review of Theory and Empirical Work*, 25 J. FIN. 383, 383 (1970). That concept of "efficiency" is one of informational efficiency—it relates to the degree to which information is reflected in prices. It thus differs from the more frequent usage of "efficiency," which connotes Pareto or potential Pareto efficiency as measured by increases in social welfare. Cf. Jules M. Coleman, *Efficiency, Utility and Wealth Maximization*, 8 HOFSTRA L. REV. 509, 512-26 (1980) (discussing various definitions of economic efficiency). To avoid confusion between these two concepts, I will use "efficiency" solely to connote economic efficiency and refer to informationally efficient stock markets as stock markets in which stock prices are accurate.

13. See, e.g., Roger J. Dennis, *Mandatory Disclosure Theory and Management Projections: A Law and Economics Perspective*, 46 MD. L. REV. 1197 (1987); Fama, *supra* note 11; Fama, *supra* note 12; Ronald J. Gilson & Reinier H. Kraakman, *The Mechanisms of Market Efficiency*, 70 VA. L. REV. 549 (1984); Donald C. Langevoort, *Information Technology and the Structure of Securities Regulation*, 98 HARV. L. REV. 747 (1985); Joel Seligman, *The Historical Need for a Mandatory Disclosure System*, 9 J. CORP. L. 1 (1983).

14. See, e.g., John F. Barry III, *The Economics of Outside Information and Rule 10b-5*, 129 U. PA. L. REV. 1307, 1317 (1981); Victor Brudney, *Insiders, Outsiders, and Informational Advantages Under the Federal Securities Laws*, 93 HARV. L. REV. 322, 341 (1979); John C. Coffee, Jr., *Market Failure and the Economic Case for a Mandatory Disclosure System*, 70 VA. L. REV. 717, 734 (1984); Frank H. Easterbrook & Daniel R. Fischel, *Auctions and Sunk Costs in Tender Offers*, 35 STAN. L. REV. 1, 11 (1982). But see Lynn A. Stout, *The Unimportance of Being Efficient: An Economic Analysis of Stock Market Pricing and Securities Regulation*, 87 MICH. L. REV. 613 (1988) (providing a more extensive and critical discussion of the benefits of accurate stock prices).

15. Even the one article focusing on the significance of accurate stock prices fails to distinguish between kinds of inaccuracies. See Stout, *supra* note 14. To the extent that commentators acknowledge distinctions between different kinds of inaccuracies, they do not greatly differentiate among them. See, e.g., Fama, *supra* note 12 (distinguishing between weak, semi-strong, and strong forms of capital market efficiency); Gordon & Kornhauser, *supra* note 11, at 767-70, 825-30 (distinguishing between speculative and allocative efficiency).

16. See *infra* Part II.

Consider, for example, a set of rules that causes information about a company's earnings to be disclosed (and thus incorporated in the company's stock price) one hour earlier than it otherwise would. Compare that set of rules with a different set that assures that, once earnings reports are released, the stock price accurately reflects the import of the earnings figures. As in the case of election returns, one may be skeptical as to whether it is worthwhile to spend a major amount of resources to obtain earnings data (or election returns) one hour earlier. On the other hand, it may be quite important to have stock prices accurately reflect the significance of published earnings figures, just as it is important that the outcome of elections accurately reflects voter preferences.

The aim of this Article is to fill these gaps in the literature and to provide a framework for analyzing the desirability of removing different kinds of stock price inaccuracies. This framework, in turn, will guide the evaluation and proper design of legal rules directed toward stock prices.¹⁷ To illustrate the application of this framework, I will selectively examine the effects of several types of regulations that seek to enhance stock price accuracy. In particular, I will systematically analyze in each Part the pertinent effects of a repeal of the insider trading rule. Commentators opposing the insider trading prohibition have asserted that permitting insider trading would increase stock price accuracy.¹⁸ In my analysis, I assume, *arguendo*, that these commentators are correct, and examine whether the enhanced accuracy resulting from insider trading would result in any tangible benefits to society.¹⁹

As a helpful preliminary, in Part I of this Article, I discuss the current legal framework for achieving stock price accuracy. In Part II, I develop a taxonomy of the different kinds of stock price inaccuracies. I categorize inaccuracies along three dimensions: cause (the reasons why stock prices may be inaccurate); manifestation (the qualitatively different ways in which stock prices can differ from fundamental values); and scope (the timing and magnitude of inaccuracies). This classification will serve as a backdrop for the analysis of the losses caused by different kinds of inaccuracies.

In Parts III to VII, I explore the various ways in which certain kinds of inaccuracies cause social losses. First, in Part III, I consider the relationship between stock prices and the allocation of capital. I argue that inaccurate stock prices can lead to an inefficient allocation of capital.

17. To the extent securities laws result in costs or serve other goals as well, one must, of course, also assess these costs and benefits in evaluating the laws.

18. See *infra* notes 42-46 and accompanying text.

19. I focus more closely on the insider trading rule because of its importance, the controversy surrounding it, and the complexity of the analysis of its effects.

To have such an effect, the stock price of a company must be incorrect at a time when the company raises, or considers raising, capital by offering stock to the public.

Next, in Part IV, I examine how stock price inaccuracies can reduce the liquidity of the stock market. Reductions in liquidity are likely to ensue if an inaccuracy causes some investors to anticipate that they will lose by trading stock. I discuss which kind of inaccuracies are likely to generate such anticipations.

In Part V, I inquire into the relationship between stock prices and risk. Since investors are risk-averse, inaccuracies that increase risk are undesirable if that risk cannot be eliminated through diversification. Inaccuracies that increase undiversifiable risk thus result in social losses.

In Part VI, I discuss stock price oriented management. Managers have an incentive to raise the stock price of their companies. Certain kinds of inaccurate stock prices may lead to social losses as they enable a manager to take actions that increase the stock price of her company, even though they lower its fundamental value.

Finally, in Part VII, I briefly address the validity of four other reasons why inaccurate stock prices may be undesirable: they may produce macroeconomic shocks; they may impede the proper operation of the market for corporate control; they may lead to inefficient terms in the corporate contract; and they may cause companies to make inferior capital budgeting decisions. With respect to each of these reasons, I examine which kinds of inaccuracies are likely to lead to significant losses.

I. LEGAL REGULATIONS AND STOCK PRICE ACCURACY

Before turning to an analysis of stock price inaccuracies, it is worthwhile to survey briefly the breadth and pervasiveness of legal regulations aimed at enhancing stock price accuracy. Most prominently, securities regulations mandate that companies disclose extensive information on a contemporaneous basis,²⁰ at periodic intervals,²¹ and on special occasions,

20. See 17 C.F.R. § 240.13a-11 (1991) (requiring filing of current reports with SEC); *American Stock Exchange, Inc. Listing Standards, Policies and Requirements*, § 401, 2 Am. Stock Ex. Guide (CCH) ¶ 10,121 (Apr. 1991) (mandating immediate public disclosure of material information); *id.* §§ 920-922, ¶¶ 10,300-10,302 (Mar. 1991) (requiring listed corporations to notify Exchange promptly of material dispositions and changes in business character, officers, or directors).

21. See 17 C.F.R. § 240.13a-1 (1991) (requiring filing of annual reports with SEC); *id.* § 240.13a-13 (requiring filing of quarterly reports with SEC); *id.* § 240.14a-3(b) (requiring affected companies to furnish annual reports to shareholders).

such as when they offer stock to the public.²² In addition, major shareholders,²³ participants in proxy contests,²⁴ and directors and officers²⁵ are required to disclose certain information.

Securities laws also prohibit "manipulation" of stock prices²⁶ and the use of "manipulative and deceptive" devices in connection with the trading of stock.²⁷ Practices prohibited under these provisions include, e.g., fictitious trades (i.e., trades that are reported on the transaction tape of the stock exchange but are not executed)²⁸ and price-pegging purchases (i.e., purchases designed to assure that a stock trades at a certain price).²⁹

Somewhat of a hybrid between the disclosure and the anti-manipulation provisions is the "disclose or abstain" insider trading rule.³⁰

22. See Securities Act of 1933, §§ 5, 7, 15 U.S.C. §§ 77e, 77g (1988). Contemporary disclosure is generally less detailed than periodic disclosure, which in turn is less detailed than the disclosure required at public offerings.

23. See Securities Exchange Act of 1934, § 13(d), 15 U.S.C. § 78m(d) (1988) (requiring holders of more than five percent of any class of registered securities to file disclosure statements with SEC).

24. See 17 C.F.R. § 240.14a-11(c) (1991) (requiring participants in proxy contests to file disclosure statements with SEC).

25. See Securities Exchange Act of 1934, § 16(a), 15 U.S.C. § 78p(a) (1988) (requiring directors, officers, and 10% shareholders to file disclosure statements with SEC).

26. Securities Exchange Act of 1934, § 9, 15 U.S.C. § 78i (1988). For an overview of the types of forbidden manipulation, see Theodore A. Levine et al., *Manipulative Practices: Past, Present and Future*, in 2 INSIDER TRADING, FRAUD, AND FIDUCIARY DUTY UNDER THE FEDERAL SECURITIES LAWS 795, 807-26 (ALI/ABA ed. 1990).

27. See Securities Exchange Act of 1934, § 10(b), 15 U.S.C. § 78j(b) (1988).

28. See *id.* § 9(a)(2), 15 U.S.C. § 78i(a)(2); see also Marcus Schloss & Co., Exchange Act Release No. 34-14332, 13 S.E.C. Docket 1295 (Jan. 3, 1978).

29. See 17 C.F.R. § 240.10b-7 (1991). Other prohibited practices are matched orders (i.e., pre-arranged trades with others), see *Edward J. Mawod & Co. v. SEC*, 591 F.2d 588 (10th Cir. 1979); wash sales (i.e., buying stock from oneself), see *J.A. Latimer & Co., Inc.*, 38 S.E.C. 790 (1958); certain short sales, see 17 C.F.R. § 240.10b-21(T) (1991); trading by persons interested in stock distributions, see *id.* § 240.10b-6; certain sales during public offerings, see *Elizabeth Baniberg*, Exchange Act Release No. 34-27672, 45 S.E.C. Docket 586 (Feb. 5, 1990); and marking a stock to close (i.e., effecting trades near the close of the trading day in order to influence the closing price), see *In re Andrew Doherty*, Exchange Act Release No. 34-29545, 49 S.E.C. Docket 10 (Aug. 12, 1991).

30. The "disclose or abstain" rule is a judicial interpretation of Rule 10b-5, 17 C.F.R. § 240.10b-5 (1991), which prohibits the employment of manipulative and deceptive devices. See *In re Cady, Roberts & Co.*, 40 S.E.C. 907, 911 (1961); see also *SEC v. Texas Gulf Sulphur Co.*, 401 F.2d 833, 848 (2d Cir. 1968), *cert. denied*, 394 U.S. 976 (1969). However, the "disclose" prong of the rule functions like a disclosure provision. For that reason, I call the rule a hybrid.

Some forms of insider trading are also prohibited under other law. See Securities Exchange Act of 1934, § 16(b), 15 U.S.C. § 78p(b) (1988) (requiring statutory insiders to return profits from short-swing trades and short sales); 17 C.F.R. § 240.14e-3 (1991) (prohibiting trading on basis of material non-public information in the context of tender offers). Insider trading may also be prohibited under state common law. See DONALD C. LANGEVOORT, INSIDER TRADING REGULATION 22-23 (1990) (noting that some states, particularly New York, hold insiders liable under the common law of corporations on a theory resembling misappropriation).

Under that rule, insiders³¹ who possess material³² non-public information must either disclose such information or abstain from trading stock in the affected companies. Thus, even though the rule does not mandate disclosure, it may encourage it by deeming trading absent disclosure as a manipulative and deceptive trading device.

Finally, securities laws regulate the institutional context in which stocks are traded. So-called "circuit breaker" rules force stock markets to close down when stock prices fall precipitously,³³ and initial margin requirements regulate the amount of credit that may be extended for the purpose of buying stock.³⁴ Another institutional practice likely to affect

31. A person is considered an insider for purposes of the rule if she is under a duty not to use information to gain trading profits. See *Dirks v. SEC*, 463 U.S. 646, 653-54 (1983). The persons who are under a duty not to use material non-public information to obtain trading gains include traditional corporate insiders (such as directors, officers, other employees, and controlling shareholders of the corporation), the corporation itself, accountants, lawyers, and other professionals who are expected by the company to keep information confidential, and "tippees" who knew or should have known that their informant breached her duty by conveying the information to them. See generally *LANGEVOORT*, *supra* note 30, at 70-85. Some courts have held that the insider trading rule applies to persons who misappropriate information entrusted to them by someone other than the subject corporation. See, e.g., *United States v. Carpenter*, 791 F.2d 1024, 1027-34 (2d Cir. 1986) (applying insider trading rule to *Wall Street Journal* employee who disclosed timing and content of column schedules before the information was publicly available), *aff'd on other grounds*, 484 U.S. 19 (1987).

32. The legal standard of materiality is met if a reasonable investor would, with substantial likelihood, view the information as significantly altering the total mix of available information. See *Basic, Inc. v. Levinson*, 485 U.S. 224, 231-32 (1988). Informational items that courts have found at least potentially material include information that massive fraud has occurred, see *Dirks*, 463 U.S. at 665 n.25; that the company is engaged in preliminary merger negotiations, see *Basic*, 485 U.S. at 238-41; that forthcoming earnings figures are different than analyst forecasts, see *Elkind v. Liggett & Myers, Inc.*, 635 F.2d 156, 163-67 (2d Cir. 1980); that substantial mineral deposits have been discovered, see *Texas Gulf Sulphur*, 401 F.2d at 849-52; that the company is about to enter a new line of business, see *SEC v. Lund*, 570 F. Supp. 1397, 1401 (C.D. Cal. 1983); and that the company will go public with a new issue of stock, see *Western Hemisphere Group, Inc. v. Stan West Corp.*, [1984-1985 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 91,858, at 90,275, 90,279 (S.D.N.Y. 1984). Courts have generally ruled, however, that "soft" information (such as asset appraisals, projections, and forecasts) is not material. See *Walker v. Action Indus., Inc.*, 802 F.2d 703, 707-10 (4th Cir. 1986) (finding no duty, absent SEC or congressional adoption of firm standard, to disclose financial projection at issue), *cert. denied*, 479 U.S. 1065 (1987); *Starkman v. Marathon Oil Co.*, 772 F.2d 231, 241 (6th Cir. 1985) (requiring disclosure of projection or appraisal only when underlying predictions substantially certain to hold true), *cert. denied*, 475 U.S. 1015 (1986); *Flynn v. Bass Bros. Enters.*, 744 F.2d 978, 985-90 (3d Cir. 1984) (applying new test for determining materiality of soft information and holding asset appraisal and valuation at issue not material). Similarly, unique expertise and skill that enable an investor to form a superior judgment about the value of a company is not itself considered material for purposes of the "disclose or abstain" rule. See *Elkind*, 635 F.2d at 165-66.

33. See *Trading Halts Due to Extraordinary Market Volatility*, 2 N.Y.S.E. Guide (CCH) ¶ 2080B (Oct. 19, 1988) (New York Stock Exchange Rule 80B); see also *Limitations on Trading During Significant Market Declines*, 2 N.Y.S.E. Guide (CCH) ¶ 2080A (Oct. 18, 1990) (New York Stock Exchange Rule 80A) (ceasing computer trading upon certain stock price swings).

34. See, e.g., 12 C.F.R. § 221.1-121 (1991) (Federal Reserve stock margin rule); *Margin Requirements*, 2 N.Y.S.E. Guide (CCH) ¶ 2431 (Oct. 26, 1989) (New York Stock Exchange margin rule).

stock price accuracy is the use of "specialists" charged with trading stock for their own account to the extent necessary to maintain fair and orderly markets.³⁵

The purpose of all these rules, and many others, is to make stock prices more accurate. Disclosure requirements, as well as the "disclose or abstain" insider trading rule, may lead to the dissemination of more (and more reliable³⁶) information than would otherwise become public,³⁷ thereby enabling investors to arrive at a more accurate assessment of a company's fundamental value.³⁸ Anti-manipulation provisions are designed to inhibit trades (real and fictitious) that are thought to move stock prices away from their fundamental value. Circuit breakers are meant to provide cooling-off periods when herd instincts or panic overtake investors.³⁹ And margin requirements have been grounded on the belief that "too much credit may operate to inflate stock prices far beyond underlying values."⁴⁰

35. Some stock exchanges allocate each stock to a particular specialist who is charged with "making a market" in the stock (i.e., to buy it at a reasonable price) and with stabilizing its price. See 17 C.F.R. § 240.11b-1 (1991); *Dealings by Specialists*, 2 N.Y.S.E. Guide (CCH) ¶ 2104 (Nov. 3, 1986) (New York Stock Exchange Rule 104.10). See generally 5 LOSS & SELIGMAN, *supra* note 2, at 2513-30.

36. The criminal and civil liabilities imposed by the securities laws for disseminating false or misleading information may make the announced information more reliable. See, e.g., Securities Act of 1933, §§ 12-13, 15 U.S.C. §§ 77k-1 (1988) (creating civil liability to innocent purchasers for untrue or misleading statements in registration statements, prospectuses, or trading communications); Securities Exchange Act of 1934, § 18, 15 U.S.C. § 78r (1988) (imposing civil liability for misleading statements); *id.* § 32, 15 U.S.C. § 78ff (allowing punishment for false or misleading statement to reach \$1 million fine and/or 10 years imprisonment for individuals, and up to \$2.5 million fine for organizations); cf. Gilson & Kraakman, *supra* note 13, at 605 (arguing that a possible solution to reducing information costs is to impose civil and criminal liabilities on low-quality information producers).

37. See Barry, *supra* note 14, at 1322 (stating that investors extract valuable information from mandated reports); Coffee, *supra* note 14, at 725-33 (arguing that absent mandatory disclosure, public goods aspect of information will lead to insufficient securities research); Morris Mendelson, *The Economics of Insider Trading Reconsidered*, 117 U. PA. L. REV. 470, 473 (1969) (reviewing HENRY G. MANNE, *INSIDER TRADING AND THE STOCK MARKET* (1966)) (asserting that insider trading would create incentive to delay release of information that could otherwise be made available to the investing public); Seligman, *supra* note 13, at 10-45 (discussing studies that show that firms not subject to disclosure requirements disclose significantly less information, and that the SEC has been effective in identifying and correcting omissions and misrepresentations in registration statements).

38. See Gilson & Kraakman, *supra* note 13 (discussing role of information in furthering market efficiency).

39. See, e.g., REPORT OF THE PRESIDENTIAL TASK FORCE ON MARKET MECHANISMS 66 (1988) [hereinafter BRADY REPORT] (finding that circuit breakers provide time out to inhibit panic and attract value traders); Bruce Greenwald & Jeremy Stein, *The Task Force Report: The Reasoning Behind the Recommendations*, J. ECON. PERSP., Summer 1988, at 3, 17-19 (arguing that circuit breakers may improve information of market participants).

40. SENATE COMM. ON BANKING AND CURRENCY, FACTORS AFFECTING THE STOCK MARKET, S. REP. NO. 1280, 84th Cong., 1st Sess. 41 (1955). See generally Kenneth D. Garbade, *Federal Reserve Margin Requirements: A Regulatory Initiative to Inhibit Speculative Bubbles*, in CRISES IN

To be sure, several of these regulations have been attacked as costly or ineffective.⁴¹ Opponents of the insider trading rule, however, have gone one step further and alleged that the rule is counterproductive: Permitting insider trading would enhance, rather than reduce, stock price accuracy.⁴² These commentators argue that the rule does not induce insiders to disclose their insider information,⁴³ but merely impedes trading by insiders. If insiders were permitted to trade,⁴⁴ other investors would arguably be able to observe whether (and to what extent) insiders buy or sell stock, and thereby "derivatively" deduce the quantitative impact of the insider information on the stock price.⁴⁵ Thus, trading by insiders

THE ECONOMIC AND FINANCIAL STRUCTURE 317 (Paul Wachtel ed. 1982). Commentators differ in their assessment of the effectiveness of margin regulations. Compare David A. Hsieh & Merton H. Miller, *Margin Regulation and Stock Price Volatility*, 45 J. FIN. 3 (1990) (claiming that there is no evidence that margin requirements reduce stock price volatility) with Gikas A. Hardouvelis, *Margin Requirements and Stock Market Volatility*, FED. RESERVE BANK N.Y. Q. REV., Summer 1988, at 80 (arguing that margin requirements reduce stock price volatility).

41. See, e.g., KRIPKE, *supra* note 9, at 97-98 (arguing that disclosure of information to SEC is unnecessary because information is available to the public well before publication of SEC documents); George J. Benston, *Required Disclosure and the Stock Market: An Evaluation of the Securities Exchange Act of 1934*, 63 AM. ECON. REV. 132, 149-51 (1973) (arguing that the '34 Act has not reduced risk or fraud in the marketplace); George J. Stigler, *Public Regulation of the Securities Markets*, 37 J. BUS. 117, 124 (1964) (claiming that mandatory disclosure system is ineffective).

42. See KRIPKE, *supra* note 9, at 105 (criticizing unnecessary expansions of insider trading prohibition because they limit the information conveyed by stock price and reduce allocational efficiency); Dennis W. Carlton & Daniel R. Fischel, *The Regulation of Insider Trading*, 35 STAN. L. REV. 857, 868 (1983) (arguing that insider trading will move stock prices closer to what prices would be if information were disclosed); Marleen A. O'Connor, *Toward A More Efficient Deterrence Of Insider Trading: The Repeal Of Section 16(b)*, 58 FORDHAM L. REV. 309, 353 (1989) (advocating repeal of Securities Exchange Act § 16(b)).

43. See Carlton & Fischel, *supra* note 42, at 879 (claiming that the argument that insider trading results in delayed disclosures has little empirical basis); O'Connor, *supra* note 42, at 354 (stating that absent affirmative duty, managers are reluctant to disclose soft information because of risk of liability if they turn out to be wrong).

44. Whether insider trading should be permitted, of course, will depend also on other costs and benefits generated by insider trading. See, e.g., Carlton & Fischel, *supra* note 42, at 869-72 (claiming that insider trading may beneficially serve to align shareholder and manager interests); Robert J. Haft, *The Effect of Insider Trading Rules on the Internal Efficiency of the Large Corporation*, 80 MICH. L. REV. 1051 (1982) (arguing that insider trading will adversely affect business decisionmaking in large corporations); Mendelson, *supra* note 37, at 489-90 (stating that insider trading creates moral hazard because rewards to those engaged in insider trading will not be commensurate to their contributions); Kenneth E. Scott, *Insider Trading: Rule 10b-5, Disclosure and Corporate Privacy*, 9 J. LEGAL STUD. 801, 808 (1980) (arguing that insider trading may be inefficient compensation scheme for management because opportunities for gaining profits from trading are infrequent and unpredictable). These arguments concerning costs and benefits of insider trading unrelated to stock price accuracy are not discussed in this Article.

45. Cf. Gilson & Kraakman, *supra* note 13, at 573-74 (discussing the indirect information leakage caused by trade decoding, whereby "uninformed traders glean information by directly observing the transactions of informed traders"); Joel Hasbrouk, *Measuring the Information Content of Stock Trades*, 46 J. FIN. 179 (1991) (examining how stock trades influence stock prices). It is also theoretically conceivable that insider trading itself exerts price pressure on the stock (with insider sales pulling prices down and insider purchases pushing them up), and that this price pressure leads to

would cause stock prices to reflect insider information, even though the underlying information would remain undisclosed.⁴⁶ In the course of analysis in this Article, I will pay special attention to this argument and examine what benefits would be created by a repeal of the insider trading rule if the opponents of the rule are correct in their assertion that the rule reduces stock price accuracy.

II. A TAXONOMY OF INACCURACIES

In order to examine the benefits of making stock prices more accurate, one must specify the kind of inaccuracy that is sought to be eliminated. The varieties of stock price inaccuracies differ greatly. For instance, the price of a stock may be inaccurate in that it takes one hour until it reflects a new item of information; or the inaccuracy may not be corrected for several months, or even years. A stock price may suddenly crash when irrational panic overtakes market participants. Or the stock of some companies, such as those engaged in genetic research, may be overvalued because investors are so captivated by the potential profits of such companies that they do not take full account of the possibility of losses.

Distinguishing between various kinds of mispricing is important for two reasons. First, the amount and nature of the economic losses caused by inaccurate stock prices depend critically on the kind of mispricing. Thus, the benefits of making stock prices more accurate hinge on the form of inaccuracy that is eliminated. For example, although both the eradication of panic crashes and the attainment of stock prices that reflect new information within a shorter time may result in social benefits, they do so for different reasons and to different degrees.

Second, any particular change in a legal rule will tend to eliminate only certain kinds of inaccuracies. Thus, to assess such a change, one

more accurate stock prices. Empirical evidence, however, indicates that one must trade huge quantities of stock to influence the stock price by price pressure alone. See Alan Kraus & Hans R. Stoll, *Price Impacts of Block Trading on the New York Stock Exchange*, 27 J. FIN. 569 (1972) (stating that even large block trades move stock prices by less than two percent; price changes may be attributable to information associated with sale rather than with demand/supply effects); Myron S. Scholes, *The Market for Securities: Substitution Versus Price Pressure and the Effects of Information on Share Price*, 45 J. BUS. 179 (1972) (finding that distributions averaging 2.2% of outstanding stock are associated with 2.2% price declines, but concluding that price declines are attributable to new information, not to price pressure). Insiders will generally neither have access to sufficient capital nor be willing to take on the requisite risk to trade in such quantities. Thus, insider trading is unlikely to change stock prices through price pressure.

46. See Carlton & Fischel, *supra* note 42, at 868; Kose John & Banikanta Mishra, *Information Content of Insider Trading Around Corporate Announcements: The Case of Capital Expenditures*, 45 J. FIN. 835 (1990); O'Connor, *supra* note 42, at 354-55.

must consider only the benefits of eliminating the pertinent kinds of mispricing, not the benefits of eliminating mispricing in general. For example, a requirement that companies disclose important information immediately and in detail may speed up the degree to which stock prices reflect such information, but not reduce the proclivity of investors to overvalue companies in trendy industries. Only the gains from eliminating the former kind of inaccuracy would count for determining whether the benefits of such a disclosure requirement exceed its costs. Gains that result from avoiding the latter overvaluations are irrelevant to this inquiry.

This Part presents a taxonomy of stock price inaccuracies as a foundation for the discussion of the benefits of accurate stock prices. I classify inaccuracies along three dimensions—cause, manifestation, and scope—and examine the various kinds of inaccuracies with respect to each of them. To illustrate these dimensions, I then analyze how a repeal of the insider trading rule would affect the accuracy of stock prices.

A. *The Dimension of Cause*

Four primary reasons explain why stock prices may deviate from their fundamental value: lack of information, misassessment of information, speculative trading, and liquidity crunches. These reasons, in turn, provide some guidance in determining whether and how legal rules may align stock prices and fundamental values. Furthermore, each cause of stock price inaccuracy tends to be associated with different social losses.

1. *Inaccuracies Caused by Non-Public Information.* One important reason why stock prices may be inaccurate is that certain information that is relevant for determining the fundamental share value is not known by a sufficient number of investors.⁴⁷ For example, assume that XYZ, Corp., an oil company, has discovered a major oil field and that only a few engineers and executives know of the discovery. The stock price of that company may not fully reflect that discovery until a sufficient number of investors find out about the discovery when, for example, the company issues a press release or communicates it to securities analysts.⁴⁸ I will refer to these types of inaccuracies as “inaccuracies caused by non-public information.”

47. See Fama, *supra* note 12; Gilson & Kraakman, *supra* note 13, at 577.

48. The requisite number of investors who must have information in order to have it reflected in the stock price depends on factors such as the nature of the information, the number of market participants, and the number of shares traded. Empirical evidence on U.S. stock markets suggests that stock prices generally reflect an item of information if that item is publicly available. See generally COPELAND & WESTON, *supra* note 11, at 361-93 (concluding that empirical consensus is that

The most direct way to remove inaccuracies caused by non-public information is to impose proper disclosure requirements. The kind of disclosure necessary will depend on how widespread the information must be in order to be incorporated in the stock price. A legal rule could require, for instance, that the company file a disclosure statement with the SEC, thus making the information publicly available. It could also obligate the company to issue a press release announcing the information, thereby making it more widely known. Or it could mandate that the company advertise in a number of major newspapers, providing easy access to the information to an even greater audience. Of course, each of these disclosure obligations involves costs that must be balanced against any benefits that would result from reducing the inaccuracy.⁴⁹

2. *Inaccuracies Caused by Misassessment.* Even if all investors have identical factual information, the collective assessment of that information as reflected in the stock price may be inaccurate.⁵⁰ That is, a select group of especially skillful investors may arrive at an assessment of fundamental stock value that is consistently more precise than the share price determined by the stock market.⁵¹ For example, all investors may have knowledge of the exploration data on a major oil field discovered by XYZ Corp., but some experts may use the same data to arrive at an estimate of the size of the oil field (and thus the value of XYZ) that is

market is efficient at least in its semi-strong form). Thus, to be reflected in the stock price, an item of information need not be known to all investors.

49. Another way to lessen inaccuracies caused by non-public information is to reduce the number of investors who must know information to have it reflected in the stock price. For example, increased use of financial advisors may decrease that number (because knowledge of the information by relatively few financial advisors with investment power over a large amount of assets may be sufficient to make the stock price reflect the information; knowledge by the same number of individual investors may not).

50. Studies in behavioral psychology suggest that individuals predictably and persistently misjudge information. See generally JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES (Daniel Kahneman et al. eds., 1982) [hereinafter JUDGMENT UNDER UNCERTAINTY]. Some commentators have suggested that such biases do affect stock prices. See Werner F.M. DeBondt & Richard Thaler, *Does the Stock Market Overreact?*, 40 J. FIN. 793 (1985) (finding that stock prices overreact to information and that the effects of such overreaction may be long-term); Franco Modigliani & Richard A. Cohn, *Inflation, Rational Valuation and the Market*, FIN. ANALYSTS J., Mar.-Apr. 1979, at 24 (arguing that impact of inflation on stock values has been systematically misassessed); Robert C. Pozen, *Money Managers and Securities Research*, 51 N.Y.U. L. REV. 923, 936-37 (1976) (stating that inaccuracies may result from asymmetries in information or inability to interpret information); Jay R. Ritter, *The Long-Run Performance of Initial Public Offerings*, 46 J. FIN. 3, 19-20 (suggesting that investors are periodically over-optimistic about earnings of young growth companies).

51. For a discussion of how markets can aggregate information and investor assessments to arrive at market values that are more accurate than individual estimates of value, see Sanford Grossman, *On the Efficiency of Competitive Stock Markets Where Traders Have Diverse Information*, 31 J. FIN. 573 (1976).

better than the collective estimate of the stock market participants. I will denominate such inaccuracies as "inaccuracies caused by misassessment."

Inaccuracies caused by misassessment are somewhat analogous to inaccuracies caused by non-public information. Inaccuracies caused by non-public information disappear as soon as a sufficient number of investors become aware of the information; inaccuracies caused by misassessment disappear as soon as a sufficient number of investors gain the requisite skills for assessing the information.⁵²

But inaccuracies caused by misassessment and inaccuracies caused by non-public information are also dissimilar. Inaccuracies caused by non-public information can generally be reduced by inducing disclosure; inaccuracies caused by misassessment cannot be effectively eliminated in this manner for several reasons. First, it is easier to pinpoint (and mandate disclosure by) those likely to have important non-public information than to identify those investors likely to possess special skills in assessing information. Thus, a rule that mandates disclosure of information assessments would tend to be either so narrow as to be meaningless or so broad that it would result in excessive disclosures of useless information assessments at a substantial compliance cost. Second, any obligation to disclose information assessments would be difficult to enforce. Because information assessments have a strong subjective element, it would be difficult to prove that an investor materially misstated her assessment of the information. Third, many "skillful" investors undertake the effort to analyze information solely to profit either by trading themselves or by selling their assessments to other investors. A public disclosure requirement for such assessments would remove the incentives to generate information assessments, and thereby make such a requirement self-defeating.

3. *Inaccuracies Caused by Speculative Trading.* Speculative trading constitutes a third reason why stock prices may be inaccurate. In determining the price they are willing to pay for a stock today, investors may be less concerned with its fundamental value than with the price others will pay for it tomorrow. What others will pay for stock tomorrow may, in turn, depend on what they believe they can get in two days, and so on. As a result, the stock price may be too high today solely because investors believe that the selling price will be high in the future,

52. Indeed, to the extent that investors with special skills rely on intangible information (such as their accumulated experience in evaluating oil exploration data), the difference between inaccuracies caused by misassessment and inaccuracies caused by such intangible non-public information becomes blurred: The superior assessment of these investors can be attributed both to the "information" they have gained through their past experiences and to their skills in processing the information.

even though fundamental factors do not justify such a price.⁵³ I will refer to such inaccuracies as "speculative mispricing."⁵⁴

In a stock market characterized by speculative mispricing, the stock price is set by market psychology—by investors trying to outsmart each other by predicting what the other investors will believe in the future⁵⁵—rather than calculating price exclusively by fundamental factors.⁵⁶ As expressed by Keynes:

[P]rofessional investment may be likened to those newspaper competitions in which the competitors have to pick out the six prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole; so that each competitor has to pick, not those faces which he himself finds prettiest, but those which he thinks likeliest to catch the fancy of the other competitors, all of whom are looking at the problem from the same point of view. It is not a case of choosing those which, to the best of one's judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practise the fourth, fifth and higher degrees.⁵⁷

Indeed, in the short term, such speculative predictions may be self-fulfilling. For example, an investor who knew that the fundamental value of a stock is, say, \$15 per share, may not be willing to sell shares for \$20 if she believed that its price will increase to \$25 per share by next month.⁵⁸ If many investors believe that the share price will increase,

53. See Joseph E. Stiglitz, *Symposium on Bubbles*, J. ECON. PERSP., Spring 1990, at 13, 13.

54. For models of speculative mispricing, see J. Bradford DeLong et al., *Positive Feedback Investment Strategies and Destabilizing Rational Speculation*, 45 J. FIN. 379 (1990); Kenneth A. Froot et al., *Herd on the Street: Informational Inefficiencies in a Market with Short-Term Speculation*, Working Paper No. 3250, National Bureau of Economic Research (1990); Jean Tirole, *On the Possibility of Speculation Under Rational Expectations*, 50 ECONOMETRICA 1163 (1982).

55. See Robert J. Schiller, *Speculative Prices and Popular Models*, J. ECON. PERSP., Spring 1990, at 55, 56-58, 61-63 (suggesting that psychological market factors influenced investor behavior in the 1987 crash and may continue to influence investor behavior in initial public offerings).

56. Of course, fundamental value factors are likely to be one element that speculators consider in predicting other investors' behavior. Thus, if investors lack perfect information about the company's fundamental value, speculative trading may be fueled by inaccuracies caused by non-public information or misassessment. Cf. J. Bradford DeLong et al., *Noise Trader Risk in Financial Markets*, 98 J. POL. ECON. 703 (1990) (presenting model showing relationship between unpredictable misperceptions of traders who do not trade on the basis of fundamental value (so-called "noise traders") and comparative returns of noise traders and sophisticated investors).

57. JOHN M. KEYNES, *THE GENERAL THEORY OF EMPLOYMENT, INTEREST AND MONEY* 156 (MacMillan & Co. 1947) (1936).

58. Speculative mispricing could not occur, however, if all investors possessed perfect information not only about the fundamental value of a stock, but also about the state of knowledge and rationality of other investors, and acted rationally to maximize their profits on the basis of the information available to them.

they may in fact push up the share price and thereby find confirmation for their beliefs—until, at some time, the speculative bubble bursts.⁵⁹

4. *Inaccuracies Caused by Liquidity Crunches.* A fourth reason why stock prices may deviate from their fundamental value is that the stock market does not have sufficient liquidity to absorb a sudden demand for or a sudden supply of stock.⁶⁰ Providing short-term liquidity to investors who want to trade stock entails costs: to immediately satisfy a desire to, for example, sell stock, traders must maintain access to sufficient cash. Because of these costs, the level of liquidity that traders maintain will be limited. Situations may arise in which the demand for liquidity, at fundamental value, exceeds the supply (e.g., because many investors want to sell stock immediately, but traders do not have enough cash at hand). To realign supply and demand, the stock price has to deviate temporarily from its fundamental value until other investors supply the cash or stock sufficient to satisfy the demand for liquidity.⁶¹ The crash of 1987—in which stock prices dropped by 508 points in one day and increased the next day by over 100 points⁶²—and the temporary increases in the stock price of companies that become included in the Standard & Poor's 500 index⁶³ (resulting from increased demand for their stock by index funds who like to hold portfolios that replicate the performance of the S&P 500 index)⁶⁴ may stem from such liquidity crunches.⁶⁵

59. The stock market crashes of 1929 and 1987 are frequently alleged to have been manifestations of the bursting of such bubbles. See, e.g., Hayne Leland & Mark Rubinstein, *Comments on the Market Crash: Six Months After*, J. ECON. PERSP., Summer 1988, at 45, 49 (1987 crash largely attributable to market panic); Stiglitz, *supra* note 53, at 16 (nonspecialists view 1987 crash as proof of existence of bubbles); Eugene N. White, *The Stock Market Boom and Crash of 1929 Revisited*, J. ECON. PERSP., Spring 1990, at 67, 78-82 (asserting that the stock market boom and bust of 1920s caused by speculative bubble). For a discussion of some historical "bubbles" (and possible fundamental value explanations), see Peter M. Garber, *Famous First Bubbles*, J. ECON. PERSP., Spring 1990, at 35.

60. See Joseph A. Grundfest, *When Markets Crash: The Consequences of Information Failure in the Market for Liquidity*, in *THE RISK OF ECONOMIC CRISIS* 62, 76 (Martin Feldstein ed., 1991).

61. *Id.*

62. BRADY REPORT, *supra* note 39, at 36-41.

63. See DIANE W. STRAUSS, *HANDBOOK OF BUSINESS INFORMATION: A GUIDE FOR LIBRARIANS, STUDENTS, AND RESEARCHERS* 324-25 (1988) (describing the Standard & Poor's 500 Index and the *Statistical Service*, a looseleaf publication).

64. See, e.g., Lawrence Harris & Eitan Gurel, *Price and Volume Effects Associated with Changes in the S&P 500 List: New Evidence for the Existence of Price Pressures*, 41 J. FIN. 815 (1986); Prem C. Jain, *The Effect on Stock Price of Inclusion or Exclusion from the S&P 500*, FIN. ANALYSTS J., Jan.-Feb. 1987, at 58.

65. See Grundfest, *supra* note 60, at 73; see also Josef Lakonishok & Edwin Maberly, *The Weekend Effect: Trading Patterns of Individual and Institutional Investors*, 45 J. FIN. 231, 231 (1990) (partially attributing stock price declines on Mondays to selling pressure by individual stockholders and reluctance of institutional investors to buy).

Liquidity crunches thus occur principally when *unexpected* liquidity shocks hit the market. If investors had sufficient advance information about the future demand for liquidity, they could garner enough cash to absorb the supply of stock without causing the stock price to fall below its fundamental value.⁶⁶ Assume, for example, that traders had sufficient advance notice that Standard & Poor will include XYZ Corp. in its S&P 500 index and that, immediately thereafter, index funds will launch massive purchases of XYZ stock. Traders could then start accumulating a sufficient supply of XYZ shares (from investors who have no special preference for companies included in the S&P 500 index) to meet the demand by index funds when it arises, instead of having to scramble for that supply when such demand arises unexpectedly. Thus, it has been suggested that one way to avoid liquidity crunches is to impose "advance warning" requirements in situations in which the demand for liquidity is likely to be extraordinarily high.⁶⁷

Liquidity crunches can be exacerbated by snowball effects in the demand for liquidity. Assume, for example, that many investors buy stocks with borrowed funds and have to make margin maintenance payments⁶⁸ to their lenders when stock prices fall.⁶⁹ Such investors may be forced to sell their stock when stock prices drop significantly in order to obtain the cash needed to make their margin maintenance payments. Then, an event that causes stock prices to fall may result in a snowballing demand for liquidity: falling stock prices force investors to sell, which in turn causes stock prices to drop further (because liquidity is limited), which forces more sales (to meet margin maintenance requirements), and so on.⁷⁰ Thus, another way to avoid liquidity crunches may be to preempt

66. Cf. James G. Gammill, Jr. & Terry A. Marsh, *Trading Activity and Price Behavior in the Stock and Stock Index Futures Markets in October 1987*, J. ECON. PERSP., Summer 1988, at 24, 43 (arguing that circuit breakers may provide time to find trade counterparties).

67. See Grundfest, *supra* note 60, at 73.

68. Margin maintenance rules specify maximum credit levels as a percentage of the current market value of stocks bought on credit. See, e.g., *Margin Requirements*, N.Y.S.E. Guide (CCH) ¶ 2431 (Oct. 26, 1989) (New York Stock Exchange Rule 431). Thus, if the price of a stock falls, investors either have to supply new equity or sell the stock. Note that margin maintenance requirements differ from the initial margin requirements discussed earlier. See *supra* text accompanying note 34. Initial margin requirements merely regulate the maximum credit level as a percentage of the purchase price of the stocks bought on credit. Thus, a decline in the stock price subsequent to the purchase will not force investors to supply new equity or sell the stock.

69. Cf. Leland & Rubinstein, *supra* note 59, at 46-47 (claiming that portfolio insurance may create similar snowball effect).

70. See, e.g., Garber, *supra* note 59, at 51 (stating that enforcement of Bubble Act of 1720 created initial downward pressure on prices of some companies, and that ensuing forced sales to meet margin requirements depressed stock prices generally); White, *supra* note 59, at 68 (noting that forced margin calls and distress sales after Black Thursday, October 24, 1929, and Black Tuesday, October 29, 1929, prompted further stock price declines).

such snowball effects, for instance by restricting purchases of stock on margin credit.⁷¹

B. *The Dimension of Manifestation*

The dimension of manifestation is concerned with the qualitative ways in which stock price inaccuracies display themselves. For example, stock prices may be inaccurate in that they drop on Mondays and rise during the rest of the week,⁷² in that stocks drop in December and rise in January,⁷³ in that newly issued stocks are undervalued,⁷⁴ or in that stock prices mystically fall when the AFC team wins the Super Bowl and rise when the NFC team wins.⁷⁵

There are, of course, innumerable possible manifestations of inaccuracies. I therefore focus on those manifestations that either have been alleged to exist or that would be likely to result from the causes of inaccuracies discussed in the previous Section. These include short-termism, excess volatility of stock markets, random short-run inaccuracies, industry-wide mispricings, and systematic discounts. I also address a number of more specific manifestations of inaccuracy whose existence is supported by some empirical evidence.

1. *Short-Termism.* Several commentators have asserted that investors have an excessive short-term focus, i.e., that they place undue weight on short-term profits.⁷⁶ Investors, according to this view, are for some reason unable to assess accurately the benefits of actions that enhance the company's long-term profit potential, but reduce short-term earnings. Rather, excessive myopia drives them systematically to undervalue companies that invest in long-term projects. Thus, for example,

71. See Hardouvelis, *supra* note 40 (finding initial margin requirements reduce stock price volatility). But see Hsieh & Miller, *supra* note 40 (finding no evidence that margin requirements reduce stock price volatility).

72. COPELAND & WESTON, *supra* note 11, at 390-91.

73. *Id.* at 391-92.

74. *Id.* at 377-80.

75. See Thomas M. Krueger & William F. Kennedy, *An Examination of the Super Bowl Stock Market Predictor*, 45 J. FIN. 691 (1990).

76. See, e.g., KEN AULETTA, GREED AND GLORY ON WALL STREET: THE FALL OF THE HOUSE OF LEHMAN 238 (1986); Robert Kuttner, *The Truth About Corporate Raiders*, NEW REPUBLIC, Jan. 20, 1986, at 17; Martiu Lipton, *Corporate Governance in the Age of Finance Corporatism*, 136 U. PA. L. REV. 1, 23-25 (1987); Louis Lowenstein, *Pruning Deadwood in Hostile Takeovers: A Proposal for Legislation*, 83 COLUM. L. REV. 249, 280 (1983). But see John J. McConnell & Chris J. Muscarella, *Corporate Capital Expenditure Decisions and the Market Value of the Firm*, 14 J. FIN. ECON. 399 (1985) (stating that stock prices increase when new investment decisions are announced); Ariel Pakes, *On Patents, R&D, and the Stock Market Rate of Return*, 93 J. POL. ECON. 390 (1983) (showing that stock prices increase with unexpected increases in research and development expenditures).

the stock price of XYZ Corp. may drop when it announces an acquisition that hurts its current earnings per share, even though it will promote its long-term profitability.⁷⁷

Undervaluation of companies investing in long-term projects could also be caused by non-public information. Managers may know that current profits are low because the company has invested in projects with long-term payoffs, but investors may lack the requisite information to distinguish between companies with permanently low profitability and companies that have low current profits only because they have invested in such projects.⁷⁸ If investors cannot differentiate between such companies on the basis of public information, they would (given their information) rationally undervalue these high-value companies.⁷⁹ That is, short-termism may result not out of some deep-rooted myopic inability to look beyond the short horizon, but out of a lack of information about the company's long-term prospects.

2. *Excess Market Volatility.* Stock prices may also be inaccurate in that stock prices in the aggregate—i.e., stock market indices—fluctuate more than warranted by changes in the fundamental value.⁸⁰ For example, aggregate stock prices may tend to drop by five percent whenever the fundamental value of stocks falls by one percent, or they may undergo wide swings even if fundamental values do not change. I will refer to this manifestation of inaccuracy as "excess market volatility."⁸¹

One reason for excess market volatility could be liquidity crunches. A sudden rush by investors to sell a large amount of stock may result in transient crashes: If the market lacks adequate liquidity to absorb the

77. Martin Lipton & Steven A. Rosenblum, *A New System of Corporate Governance: The Quinquennial Election of Directors*, 58 U. CHI. L. REV. 187, 208 (1991).

78. See Jeremy C. Stein, *Takeover Threats and Managerial Myopia*, 96 J. POL. ECON. 61, 67 (1988).

79. The value assigned to these companies would depend on the relative probability that a company with low current profits is a low-value or a high-value company, and on the value generally assigned to low-value and high-value companies.

80. See, e.g., Eugene F. Fama & Kenneth R. French, *Permanent and Temporary Components of Stock Prices*, 96 J. POL. ECON. 246 (1988); Robert J. Shiller, *Do Stock Prices Move Too Much to Be Justified by Subsequent Changes in Dividends?*, 71 AM. ECON. REV. 421 (1981). But see Robert C. Merton, *On the Current State of the Stock Market Rationality Hypothesis*, in *MACROECONOMICS AND FINANCE: ESSAYS IN HONOR OF FRANCO MODIGLIANI* 93 (Rudiger Dornbusch et al. eds., 1987) (noting possible econometric flaws in these studies).

81. Excess volatility in the price of individual stocks will not necessarily result in excess market volatility. Assume, for example, that investors overreact only to company-specific information (e.g., the state of health of the CEO). As a result, individual stock prices may be excessively volatile, but stock markets in the aggregate would not (because the "overreaction" element in the stock price is diversifiable). Cf. Olivier J. Blanchard & Mark W. Watson, *Bubbles, Rational Expectations, and Financial Markets*, in *CRISES IN THE ECONOMIC AND FINANCIAL STRUCTURE*, *supra* note 40, at 295 (noting speculative bubbles on specific stocks).

sales pressure rapidly, stock prices would temporarily fall below their fundamental value, and climb back to that value as investors obtain access to sufficient cash.⁸²

Other causes of inaccuracies may also account for excess market volatility. For instance, studies show that many people overreact to unexpected and dramatic news events.⁸³ Overreaction by investors to news events that affect a large number of firms (such as information about the likelihood of a recession or the level of interest rates) would result in excess market volatility: Positive information would cause aggregate stock prices to increase more than fundamental values; negative information would cause them to drop below fundamental values.⁸⁴ Speculative trading could also cause excess market volatility.⁸⁵ For example, excessive declines in stock prices could be caused by speculators that anticipate, and thereby fuel, panic sales by other investors.⁸⁶

3. *Random Short-Run Inaccuracies.* Random short-run mispricing is characterized by two elements. First, the mispricing is "random" in that there is no common trend among the companies whose stock is mispriced; that is, whether a company is undervalued, overvalued, or valued correctly is not related to some widespread common factor (such as whether the company invests in long-term projects).⁸⁷ Second, new sources of inaccuracies tend to emerge, and old sources disappear, frequently and unpredictably, thus causing the amount by which companies are misvalued to change continuously.

One reason why stock prices may be inaccurate in this manner is that many firm-specific information items of moderate importance are either not sufficiently public or are temporarily misassessed.⁸⁸ Assume,

82. See *supra* text accompanying notes 60-71.

83. See Daniel Kahneman & Amos Tversky, *Intuitive Prediction: Biases and Corrective Procedures*, in JUDGMENT UNDER UNCERTAINTY, *supra* note 50, at 414, 416-17 (noting that predicted values tend to be selected to match distribution of impressions, without considering the uncertainty and unpredictability of the estimate itself); cf. Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, in JUDGMENT UNDER UNCERTAINTY, *supra* note 50, at 3, 5, 8-9 (finding reactions even to worthless information).

84. See DeBondt & Thaler, *supra* note 50 (finding empirical evidence of stock market overreaction).

85. See DeLong, *supra* note 54 (presenting such a model).

86. See BRADY REPORT, *supra* note 39, at 29-30 (concluding that the October 1987 crash was caused in part by trading-oriented institutions that sold stock in anticipation of stock declines caused by forced selling by portfolio insurers and mutual funds).

87. Stock price movements themselves will, of course, not be random. Rather, stock prices will tend to revert to fundamental values. See Fama & French, *supra* note 80, at 247 (discussing mean-reverting components of stock prices).

88. Firm-specific speculative trading, if sufficiently widespread, could also result in random short-run mispricing.

for example, that on February 1, XYZ Corp. is slightly undervalued because investors are unaware that employee absenteeism in one of XYZ's plants has declined. By May 1, the drop in absenteeism will be reflected in XYZ's published quarterly earnings, and thereby incorporated into XYZ's stock price. However, at that point, investors may not be aware that a fire has damaged one of XYZ's production facilities. Consequently, investors may at this time overvalue XYZ stock.

4. *Industry-Wide Inaccuracies.* Inaccuracies may systematically affect firms that operate in the same industry. That is, all firms that are engaged in the same industry may tend to be either overvalued or undervalued. For example, domestic oil companies may be generally undervalued,⁸⁹ while airlines may be systematically overvalued.

Industry-wide inaccuracies can be caused by non-public information or misassessment. If an item of information that affects all firms in an industry remains undisclosed, all firms in that industry are likely to be similarly mispriced. Likewise, if investors misassess the significance of an item of information that bears on a whole industry, industry-wide inaccuracies may ensue.

Assume, for example, that investors significantly underrate the chances of a crisis in the Middle East, which would limit the oil supply from that region, cause a drastic increase in oil prices and, consequently, increase profits of domestic oil firms. Such misassessments would cause the stock price of all domestic oil firms to be undervalued. Similarly, if investors are not aware that the Department of Transportation is likely to adopt new regulations that increase airline competition, and thereby reduce oligopolistic profits earned by airlines, airlines may be overvalued.

5. *Systematic Discounts.* Stock markets may generally tend to undervalue all or most firms.⁹⁰ Empirical evidence suggests that the fundamental value of those firms whose fundamental value can be easily calculated systematically exceeds those companies' stock market value.⁹¹ Therefore, one may conjecture that the fundamental value of other firms

89. See Reinier Kraakman, *Taking Discounts Seriously: The Implications of "Discounted" Share Prices as an Acquisition Motive*, 88 COLUM. L. REV. 891, 906-07 (1988) (noting evidence of discounting in oil industries and natural resource companies).

90. See *id.* at 907-08 (noting that Tobin's *q* ratio, the ratio of firms' market value to asset replacement cost (adjusted for inflation), has varied from 50% to 105%, suggesting that stock undervaluation may be widespread).

91. See, e.g., *id.* at 902-06 (relating strong evidence that closed-end mutual funds trade below value of their assets); Rex Thompson, *The Information Content of Discounts and Premiums on Closed-End Fund Shares*, 6 J. FIN. ECON. 151, 151-52 (1978) (discussing the difficulty in giving an explanation for the existence of discounts and premiums in trading closed-end mutual funds that is consistent with a competitive market for fund management).

(whose fundamental value is difficult to calculate) also exceeds their respective stock value—in other words, that stocks trade at systematic discounts.

Speculative mispricing could be one explanation for such discounts. Investors may believe that the stock market will continue to undervalue firms for the indefinite future. Even investors who know that stocks are undervalued may thus not bid up the stock price to its fundamental value. (Why buy a stock that is worth \$25 for \$20 today, if it is not going to sell for more than \$20 tomorrow?) Investors' expectations thus become self-fulfilling and self-validating. Because everyone expects stocks to remain underpriced, they do remain underpriced; and because expectations that stocks would remain underpriced in the short run were realized, investors may then become more confident that their expectations that stocks will remain underpriced for the indefinite future will also be realized.⁹²

6. *Other Manifestations.* Some empirical studies of stock markets have focused on more specific manifestations of inaccuracies. These studies have, for example, found evidence (although far from conclusive evidence)⁹³ that the stock market undervalues small companies,⁹⁴ companies with low price-earnings ratios,⁹⁵ companies that have performed poorly in the past,⁹⁶ and closed-end mutual funds.⁹⁷ Other studies have found evidence that points to specific, apparently anomalous, stock price patterns that are ostensibly inconsistent with the efficient market hypothesis.⁹⁸

92. Even in the presence of such speculative mispricing, investors could buy and hold stock of discounted firms and thereby eventually obtain the stock's fundamental value. However, if investors have limited horizons (and thus want to sell the stock at some point rather than hold it forever), this strategy may expose them to the (non-fundamental) systematic risk of changes in the amount of the discounts. Investors must be compensated for such risk by a higher rate of return. As the risk of changes in the amount of discounts is non-fundamental (unlike the risk of changes in the amount of the fundamental value), a stock will, in equilibrium, trade below its fundamental value. See DeLong, *supra* note 56, at 711-12 (stating that noise traders create risk of non-fundamental price change that drives prices down and returns up).

93. See, e.g., Marc R. Reinganum, *Misspecification of Capital Asset Pricing: Empirical Anomalies Based on Earnings' Yields and Market Values*, 9 J. FIN. ECON. 19, 44-45 (1981) (providing explanation for empirical results consistent with stock price accuracy).

94. See Rolf W. Banz, *The Relationship Between Return and Market Value of Common Stocks*, 9 J. FIN. ECON. 3, 8, 16-17 (1981); Reinganum, *supra* note 93, at 40-41, 45.

95. See S. Basu, *Investment Performance of Common Stocks in Relation to Their Price-Earnings Ratios: A Test of the Efficient Market Hypothesis*, 32 J. FIN. 663, 666 (1977); Reinganum, *supra* note 93, at 41-42.

96. See DeBondt & Thaler, *supra* note 50, at 799-803.

97. See *supra* note 91.

98. For examples that have been empirically tested, see *supra* notes 72-75 and accompanying text. See also Michael C. Jensen, *Some Anomalous Evidence Regarding Market Efficiency*, 6 J. FIN.

Such specific inaccuracies may be merely particular reflections of the more general manifestations of inaccuracies described above. For example, the undervaluation of closed-end mutual funds may represent one easily detectable instance of systematic discounts, rather than a mispricing peculiar to mutual funds. Similarly, undervaluation of companies that have performed poorly in the past may be just one instance of short-termism (i.e., of investors giving undue weight to last quarter's earnings) or of a general trend by investors to overreact to information (i.e., to the negative information that past performance was poor). Alternatively, these specific inaccuracies may point to some more peculiar and narrow manifestation of mispricing. For example, the undervaluation of closed-end mutual funds (if there is indeed such undervaluation) may be unique to closed-end funds, rather than an instance of systematic discounts.

C. *The Dimension of Scope*

Having discussed the causes and the qualitative manifestations of mispricings, I wrap up the taxonomy of inaccuracies by examining the scope of mispricing. The dimension of scope relates to three more quantitative aspects of stock price inaccuracies: the timing of inaccuracies; the degree of deviation between fundamental value and market price; and the number (and importance) of the companies subject to the mispricing.

1. *The Timing of Mispricing.* In analyzing inaccuracies in the pricing of stock, one must consider the timing of the mispricing. Timing of mispricing embodies two elements: how long stock prices deviate from fundamental values; and whether stocks are mispriced during "critical" time periods in which inaccuracies are especially undesirable.

The durational aspect of mispricing is relatively straightforward: Deviations from fundamental values can range on a spectrum from short-lived to very long-lasting. For example, the discovery of a gold mine on XYZ Corp.'s property could, if announced quickly, be incorporated into XYZ's stock price within hours. But if XYZ Corp. does not release this information, it may take several years until the discovery is fully reflected in the stock price.⁹⁹ The benefits of a rule eliminating an inaccuracy generally depend on how quickly the rule removes the inaccuracy and on how long that inaccuracy would otherwise persist.

ECON. 95 (1978) (providing overview of studies finding evidence contradictory to efficient market hypothesis).

99. A succession of short-term inaccuracies can also cause stock prices to differ permanently from fundamental values. Random short-run mispricing, for example, could have such an effect. See *supra* notes 87-88 and accompanying text.

The second timing aspect of mispricing relates to whether stock prices are inaccurate at certain "critical" time periods during which inaccuracies would create especially high costs. I argue that public offerings of stock constitute such critical periods, and that it is more important to have accurate stock prices during public offerings than during other periods in which a company's stock is trading.¹⁰⁰

If accurate stock prices during critical periods are of special concern, legal regulations designed to enhance accurate stock pricing could target these periods. This way, the cost of enforcing and complying with the legal rules would be incurred only in those instances where the benefits are greatest. Indeed, present securities laws contain a number of regulations that are principally directed to public offerings: Companies must make more extensive disclosures than during regular periods,¹⁰¹ and certain trading activities are prohibited as manipulative during public offerings, but are permitted at most other times.¹⁰²

2. *The Degree of Mispricing.* Inaccuracies also differ importantly in the degree of mispricing, i.e., how much the market value of a stock deviates from its fundamental value. The costs to society from sizeable deviations between price and value tend to be larger than the costs from negligible ones. Thus, in assessing the benefits of a legal rule designed to reduce an inaccuracy, one has to inquire into the degree of the inaccuracy and the extent to which the rule would reduce it.

3. *The Number and Importance of Firms Affected.* Finally, inaccuracies have to be distinguished according to the number of firms affected and the importance of these firms. The costs to society created by a particular inaccuracy—and the benefits of a legal rule eliminating such inaccuracy—are a function of how many firms are subject to it. Apart from mere numbers, the losses caused by an inaccuracy may also depend on the economic significance of the firms whose shares are mispriced.

Legal rules can (and to some degree do) take account of the economic significance of firms by imposing stricter regulations on firms that tend to be more important. For example, the disclosure requirements of the Securities Exchange Act apply only to companies with a large

100. See *infra* notes 126-73 and accompanying text; see also *infra* notes 279-90 and accompanying text (noting the importance of initial stock price at public offerings reflecting provisions of corporate contract).

101. See *supra* note 22 and accompanying text.

102. See *supra* note 29 (discussing restrictions on short sales and sales by companies and underwriters during public offerings).

number of security holders.¹⁰³ These companies tend to be larger and more important than corporations with few shareholders.

D. *Dimensions of Mispricing and the Insider Trading Rule*

The "disclose or abstain" insider trading rule prohibits insiders from trading when they possess material, non-public information.¹⁰⁴ Opponents of the insider trading rule argue that permitting insiders to trade on non-public information would enable other investors, who would observe the trades by insiders, to deduce the quantitative impact of that information, and thus make stock prices more accurate.¹⁰⁵ In this Section, I categorize the kinds of inaccuracies removed by a repeal of the insider trading prohibition according to the taxonomy of inaccuracies developed in this Part.

1. *Insider Trading and the Causes of Inaccuracies.* The insider trading rule principally creates inaccuracies caused by non-public information.¹⁰⁶ The persons subject to the rule, including the corporation and its managers,¹⁰⁷ are the ones most likely to possess non-public information about their company and are prohibited from trading whenever they possess material non-public information. Opponents of the rule argue that permitting insider trading would lead to derivative disclosure of that

103. See Securities Exchange Act of 1934 § 13(a), 15 U.S.C. § 78m(a) (1988) ("Every issuer of a security registered pursuant to section 78l of this title shall file . . ."); *id.* § 12(g)(1), 15 U.S.C. § 78l(g)(1) (requiring registration of securities with 500 or more stockholders).

104. See *supra* text accompanying notes 30-32.

105. See *supra* notes 42-46 and accompanying text.

106. The insider trading prohibition may also incidentally contribute to other causes of inaccuracies. The insider trading rule may prevent insiders who possess material undisclosed information from supplying liquidity to the market during liquidity crunches or from trading on the basis of their assessments of public information. As a result, liquidity crunches may be exacerbated, and the market's assessment of public information may be deficient.

However, any such incidental effects tend to be low for two reasons. First, such incidental effects will only occur in the (relatively infrequent) case in which, say, a liquidity crunch or market misassessment happens to coincide with the insider possessing material non-public information. A superior ability to assess information does not constitute material information and therefore would not, by itself, prevent the insider from trading stock. See *supra* note 32. Nor, for that matter, would the presence of speculative mispricing or liquidity crunches trigger the insider trading prohibition. (By contrast, insiders' possession of material non-public information, by definition, generally coincides with inaccuracies caused by non-public information.) Second, insider trading is not as essential for removing inaccuracies that are *not* caused by non-public information: Many outsiders (such as financial analysts, industry experts, technical stock analysts, and traders on the exchange) are as good as, or better than, insiders in assessing public information, in identifying and counteracting speculative trading, and in supplying liquidity to the market. (By contrast, few outsiders possess the non-public information known to insiders. Thus, trading by insiders may be essential to convey insider information indirectly.)

107. See *supra* note 31.

information, and thus reduce the inaccuracies caused by non-public information.¹⁰⁸

Moreover, opponents of the insider trading rule argue that a rule that requires direct disclosure of the relevant information is often not an expedient alternative to permitting insider trading.¹⁰⁹ Some information may be of a type that cannot be credibly disclosed (e.g., that the company is about to make a major research breakthrough).¹¹⁰ Other information may lose its value if it is disclosed (e.g., a confidential study revealing the presence of valuable mineral ore deposits on land the company intends to purchase)¹¹¹ or subject the insiders to liability for securities fraud if it turns out to be incorrect.¹¹² Thus, permitting insider trading is arguably the most effective way to have certain information reflected in the stock price.

2. *Insider Trading and the Manifestations of Inaccuracies.* Insider trading can enhance stock price accuracy only if at least two conditions are satisfied. First, the insider must possess superior knowledge of how the stock price of a company deviates from its fundamental value. Absent such knowledge, there is no reason to believe that the insider would tend to buy undervalued, or sell overvalued, stock.¹¹³ Second, the insider trading rule must prevent the insider from making trades that she would otherwise make. If not, the insider can trade, and through these trades cause the stock price to adjust, in the presence of the insider trading prohibition just as well as in its absence.

The circumstances in which these requirements are satisfied correlate with the manifestations of mispricing. Consider, for example, random short-run mispricings. As discussed, random short-run mispricing is likely to result when disclosure of firm-specific information items is delayed.¹¹⁴ Managers, however, often possess the pertinent information before the information is disclosed and thus will know whether their company is likely to be overvalued or undervalued. Moreover, in some instances, such information (e.g., undisclosed earnings figures) would be regarded as material, and managers would thus not be permitted to

108. See *supra* notes 44-46 and accompanying text. These inaccuracies are not reduced because more investors know information, but because knowledge of the underlying information by fewer investors is sufficient to have it reflected in the stock price.

109. See Carlton & Fischel, *supra* note 42, at 866-68.

110. See *id.* at 868.

111. See *id.* at 867-68.

112. See O'Connor, *supra* note 42, at 354 (noting that managers will not disclose soft information for fear of legal liability).

113. Furthermore, if insiders do not generally possess such knowledge, other investors would not deduce information from their trading activities.

114. See *supra* text accompanying notes 88.

trade.¹¹⁵ In these cases, therefore, a repeal of the insider trading prohibition might reduce the extent of such mispricing.

On the other hand, a repeal of the insider trading prohibition is not likely to reduce excess market volatility. This manifestation of inaccuracies may be caused by liquidity crunches, overreaction to information, or market-wide speculative trading.¹¹⁶ But whatever the cause, a repeal of the insider trading prohibition will make little difference in reducing excess market volatility. First, a manager would not necessarily know whether the stock price of her company is overvalued or undervalued.¹¹⁷ Second, even if a manager knew, for example, that her company is undervalued because the market overreacted to a recent increase in inflation rates, such knowledge would not be considered material non-public information.¹¹⁸ Thus, the manager would generally be permitted to buy stock of her company even in the presence of the insider trading rule.¹¹⁹

3. *Insider Trading and the Scope of Inaccuracies.* As discussed, inaccuracies in stock prices differ both in timing, degree, and the number and importance of the firms affected.¹²⁰ The benefits of repealing the insider trading rule will thus depend on how quickly insider trading will eliminate inaccuracies, the degree to which inaccuracies are reduced by permitting insider trading, and how many and what kinds of firms will be affected by insider trading.

In considering the argument that permitting insider trading enhances accuracy, one must consider how long the inaccuracy would persist in the absence of insider trading.¹²¹ The answer to this question will necessarily depend on the nature of the underlying information.

Assume that insiders of Alpha Corp. have information that a raider plans a hostile takeover of Alpha. Insiders of Beta Corp. have sensitive

115. See *supra* note 32 (discussing the legal standard of materiality).

116. See *supra* text accompanying notes 82-86.

117. For managers to have such knowledge, either they would have to know whether the inaccuracy leads to overvaluation or undervaluation, or they would have to know the fundamental value of the company itself. Insiders will have the former knowledge when they possess non-public information, and that information is the cause of the misassessment. On the other hand, managers cannot necessarily determine overvaluation or undervaluation when overreaction or speculation leads to inaccuracies. Some insiders may, of course, have knowledge about the fundamental company value itself and therefore will know in what direction the stock is mispriced.

118. See *supra* note 32 (noting that expertise in assessing public information is not material non-public information under insider trading rule).

119. To be sure, insiders may by coincidence also have material non-public information on their companies and therefore be prohibited from trading. See *supra* text accompanying note 118.

120. See *supra* notes 99-103 and accompanying text.

121. Insider trading will not, of course, result in an immediate reduction in inaccuracies. Rather, the stock price will not reflect the insider information until other investors have discovered the trading activity by insiders and inferred the import of that activity on the stock price.

information about the development of a new drug that must be kept secret for about five years. Permitting Alpha insiders to trade would only remove a short-term mispricing, because information on hostile takeovers becomes public relatively fast. (Alpha's raider, after all, must make a public bid to acquire Alpha.) Absent trading by Beta insiders, however, Beta stock may remain mispriced over the long term because the information underlying their trades will probably remain undisclosed for several years.

Thus, a repeal of the insider trading rule is likely to create greater benefits (in terms of accuracy) in instances analogous to Beta's, when the underlying information is of such a nature that it is unlikely to be directly disclosed to the market for prolonged periods. When the underlying information is likely to reach the market relatively soon in any event, as in the case of Alpha, the benefits of allowing insider trading are more remote.

As to the degree of mispricing, even opponents of the insider trading rule admit that permitting insider trading merely reduces, but does not eliminate, inaccuracies stemming from the lack of direct disclosure of insider information.¹²² Derivative disclosure of insider information through insider trading activities is, for a number of reasons, an imprecise means of communicating information: insiders may hide their trading activity; other market participants may not be able to distinguish between trades by insiders motivated by insider information and trades motivated, say, by a need for cash; and even if detected, insider trades would be only a "noisy" indicator of the significance of the insider information for company value.¹²³ Thus, inducing direct disclosure of information would generally remove inaccuracies more comprehensively than would insider trading.¹²⁴

The number and importance of the firms affected by the insider trading rule will, of course, depend on how often insiders will possess material non-public information that would give rise to insider trading if it were permitted. But permitting insider trading will not necessarily enhance stock market accuracy. In many instances, insiders could easily reveal the non-public information directly, instead of using it for insider trading. Thus, the benefits of permitting insider trading should be properly confined to those instances where direct disclosure is undesirable or

122. See, e.g., Carlton & Fischel, *supra* note 42, at 863.

123. See generally Gilson & Kraakman, *supra* note 13, at 631-32 (arguing that insider trading aimed at market efficiency would be a comparatively inefficient capital market mechanism because of the noise associated with derivatively informed trading).

124. Opponents of the insider trading rule respond that requiring direct disclosure of information is often impracticable. See *supra* text accompanying notes 109-12.

impossible: where disclosure would destroy the value of the information, would not be credible, or would not occur because it may subject insiders to liability for securities fraud.¹²⁵ The extent to which insiders possess such information, but are prevented from trading on it by the insider trading rule, is unfortunately a question for which very little evidence, beyond mere conjecture, is available.

E. *Concluding Remarks*

Differentiating among the different types of inaccuracies is necessary for a proper analysis of securities regulations. A particular regulation may often affect just one of the causes of inaccuracy, involve only certain manifestations of inaccuracies, and merely influence stock prices of certain companies at certain times. The benefits of a regulation that enhances stock price accuracy depend on the cause, the manifestation, and the scope of the inaccuracy that is eliminated. For instance, the analysis has shown that a repeal of the insider trading prohibition would tend to lessen (but not remove) inaccuracies caused by non-public firm-specific information, and that such inaccuracies may otherwise persist for prolonged periods where the underlying information is unlikely to be directly disclosed.

The following Parts will examine the social costs associated with inaccurate stock prices. Legal regulations attempt to avoid these costs. The discussion of the taxonomy of inaccuracies, together with the following discussion of the various social losses caused by inaccurate stock prices, comprises the general framework developed in this Article for evaluating, and guiding the design of, legal regulations directed at stock prices.

III. CAPITAL ALLOCATION

Inaccurate stock prices can result in an inefficient allocation of capital. Stock prices influence capital allocation because the number of shares a company has to sell in order to raise a given amount of capital—and thus the portion of equity existing shareholders have to hand over to new shareholders—depends on the price at which such shares can be sold. Stock prices can have this influence even if one takes into account that companies can raise capital from alternative sources and through firm commitment underwriting. However, only a few kinds of inaccuracies will have an adverse impact on the allocation of capital.

125. See *supra* notes 109-12 and accompanying text.

A. *Stock Price Accuracy and Capital Allocation*

To see how accurate stock prices further an efficient allocation of capital, assume that companies can obtain capital only by selling stock to the public. Assume, further, that companies decide to raise and invest additional capital whenever doing so benefits their existing shareholders; that is, whenever it leads to an increase in the fundamental value of the shares held by its existing shareholders.¹²⁶

From the perspective of economic efficiency, a company should invest in a project if the benefits to society from investing in the project exceed the costs to society. Absent market imperfections,¹²⁷ only an investment project that generates such net social gains will generate profits to the company investing in it. Thus, it is generally desirable for companies to invest in all projects, and only in projects, that are profitable.

Under these circumstances, accurate stock prices lead to an efficient allocation of capital and to efficient investments. When stock prices are accurate, new investors pay for newly issued shares exactly what they are worth. Thus, any profits or losses from investing in projects fully accrue to existing shareholders.

Inaccurate stock prices, however, can lead to an inefficient allocation of capital.¹²⁸ When companies raise capital at inaccurate prices, existing shareholders derive gains to the extent that new investors overpay for their shares, and suffer losses to the extent that new investors underpay. If the gains to existing shareholders from issuing overpriced shares exceed a project's losses, a company may raise capital for such an unprofitable project; and it may refrain from raising the capital for a lucrative project if the losses from selling new shares at a bargain price exceed the project's profits.

126. As discussed below, the wealth transfers between old and new shareholders inherent in issuing stock at inaccurate prices distort investment decisions if companies act in the interest of their existing shareholders. See *infra* notes 128-33 and accompanying text. As a corollary, if companies acted in the combined interest of both old and new shareholders, these wealth transfers will not lead to capital misallocation.

127. In addition to stock market imperfections, imperfections in the market for a company's products or supplies, such as imperfect competition or costly externalities, would distort investment decisions.

128. Several commentators have noted this effect, often without analyzing it in further detail. See, e.g., Brudney, *supra* note 14, at 341 (arguing that all relevant information must be available to the public and accurately appraised to achieve allocational efficiency); Carlton & Fischel, *supra* note 42, at 866 (stating that the more accurate stock prices are, the better they guide capital investments); Gordon & Kornhauser, *supra* note 11, at 769 (claiming that allocative efficiency would result in correct investment decisions). On the other hand, Professor Lynn Stout provides an extensive discussion of the effect of stock prices on capital allocation. See Stout, *supra* note 14, at 642-65. However, her conclusions concerning the impact of stock prices, the effect of alternative capital sources and firm commitment underwriting, and the importance of expected deviations from fundamental values diverge from mine.

Assume, for example, that both XYZ Corp. and ABC Inc. have 1.1 million existing shares and a value of \$109 million.¹²⁹ XYZ Corp. has the opportunity to raise \$10 million in new equity and to invest in Project A, which would increase XYZ's value by \$11 million. ABC Inc. can also raise \$10 million in new equity but can invest only in Project B, which would raise the company's value by merely \$8 million.

From society's point of view, XYZ Corp. should invest in Project A, but ABC Inc. should not invest in Project B. If stock prices are accurate, these actions will also maximize the value of XYZ and ABC's existing shares. Thus, accurate stock prices would induce XYZ Corp. and ABC Inc. to act in the way that is socially desirable.

To illustrate this effect, consider the effect of the investments on the stock price of these two companies. If stock prices are accurate, XYZ Corp. will have to sell 100,000 shares to raise \$10 million.¹³⁰ After investing the \$10 million in Project A, XYZ Corp.'s pre-existing 1.1 million shares would have a value of \$110 million—\$1 million more than if XYZ Corp. does not raise new capital. ABC Inc., however, would have to sell 102,807 shares to raise \$10 million for Project B.¹³¹ After investing in Project B, the original 1.1 million shares would be worth only \$107 million.

Assume, however, that XYZ could only issue shares at less than their fundamental value, e.g., that it would have to sell 118,000 shares at \$85 to raise \$10 million. After doing so and investing in Project A, XYZ's old shareholders would hold about ninety percent of XYZ's shares, with a value of about \$108 million—less than the value of their shares if XYZ does not raise capital.¹³² Analogously, assume that ABC Inc. could issue shares at more than their fundamental value; that, for example, it could raise \$10 million by selling 75,000 shares at \$134 per share. Under this scenario, ABC Inc. would profit by raising the capital to invest in Project B. ABC Inc. could absorb Project B's \$2 million loss because it financed the investment by selling shares worth about \$7.5

129. As used in this Part, company value will refer to the value of a company's equity, rather than to the value of its assets.

130. After selling the 100,000 shares, XYZ Corp. would have a value of \$120 million, 1.2 million outstanding shares, and thus a share price of \$100 per share. At \$100 per share, selling 100,000 shares raises \$10 million.

131. Because Project B is less valuable than Project A, ABC's shares will have a lower price than XYZ's, and ABC will have to issue more shares to raise the same amount of new equity. After selling 102,807 shares, ABC Inc. would have a value of \$117 million, and 1,202,807 shares. Thus, the share price would be approximately \$97.25 per share. At that price, selling 102,807 shares raises approximately \$10 million.

132. The reason for this value decline is, of course, that new shareholders derive a \$1.6 million windfall from buying shares worth \$11.6 million for \$10 million.

million for \$10 million—thus generating a net gain of \$500,000 to its existing shareholders.¹³³

B. *Alternative Capital Sources and Firm Commitment Underwriting*

Inaccurate stock prices bias the allocation of capital when companies' only access to capital is through the sale of stock at its market price. In reality, however, companies can obtain capital from a variety of other sources.¹³⁴ And even when companies sell stock, they often sell it to an underwriter at a negotiated price in a "firm commitment" underwriting, rather than to the public at the price set by the stock market. In predicting the effects of stock price inaccuracies on market allocation, modifications must be made in light of these considerations.

1. *Alternative Capital Sources.* A company that wants to make investments can try to tap a number of sources of capital. In addition to issuing stock to the public, companies often borrow money from banks, issue bonds, seek equity infusions from their existing owners, obtain funds from venture capitalists, or employ internally generated cash flows.

The impact of stock prices on the amount of capital allocated to companies is, of course, lessened by the existence of these alternative sources of capital. Even if the stock of a company is undervalued and the company is reluctant to issue new equity, it may nevertheless be able to fund investment projects through these other sources.

But even though alternative sources of capital limit a company's dependence on outside equity, stock prices have a significant impact on capital allocation for three reasons. First, overvalued companies still

133. To the extent that investors are aware that companies act in such fashion and anticipate that shares that are offered will tend to be overpriced, they will generally reduce the price they are willing to pay for newly issued shares. See Stewart C. Myers & Nicholas S. Majluf, *Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have*, 13 J. FIN. ECON. 187, 203 (1984). That is, they will interpret a decision by a company to issue shares as a sign that its shares are overvalued. See Clifford W. Smith, Jr., *Investment Banking and the Capital Acquisition Process*, 15 J. FIN. ECON. 3, 4-15 (1986) (presenting empirical evidence that the stock price of a company declines when it issues new stock). As a result, many companies whose stock is not overpriced will find their shares underpriced if they decide to issue new shares, making equity financing unattractive and thereby inducing deficient investment levels and overleverage. In the extreme, it is conceivable that no equity offerings would be made at all. See Myers & Majluf, *supra*, at 207-09 (presenting model in which companies would never issue equity, relying instead on debt to finance investment); cf. George Akerlof, *The Market for Lemons: Quality and the Market Mechanism*, 84 Q.J. ECON. 488 (1970) (arguing that when sellers have greater knowledge than buyers, market collapse may result).

134. See KRIPKE, *supra* note 9, at 135-39 (noting that corporations finance large portion of new capital expenditures through resources obtained from retained earnings and depreciation, and another substantial portion is raised through the private placement market); Stout, *supra* note 14, at 645-47 (stating that equity provides only negligible portion of corporate financing).

have an incentive to raise unneeded capital.¹³⁵ To the extent that such companies invest their excess capital in unprofitable projects, society suffers losses.¹³⁶

Second, not all companies have access to alternative capital sources. For example, covenants in existing debt agreements may limit the ability of a company to incur additional debt.¹³⁷ A firm's owners may be unable to infuse additional cash into the company. Internally generated cash flows may not be sufficient to provide capital for all profitable investments. Thus, for some companies, raising equity from the sale of stock may be the only practicable way to obtain sufficient capital.

Third, even if alternative capital sources are available, raising capital from them may be an inadequate substitute for selling stock to the public. Incurring more debt may result in overleverage, moving a company dangerously close to bankruptcy¹³⁸ or inducing it to take excessive risks.¹³⁹ An existing owner may be reluctant to contribute additional cash to her company because she prefers to diversify her investments. Or companies may prefer to issue stock to the public because such stock is a

135. See Ritter, *supra* note 50, at 19-20 (finding evidence for proposition that firms issue more stock during times when investors are overly optimistic).

136. Some commentators have assumed that overvalued firms that raise too much capital would always invest such capital in projects that at least break even, such as in treasury bonds. See, e.g., Myers & Majluf, *supra* note 133, at 187-88, 201-02 (assuming decisions to invest will be made only on projects with a net present value ≥ 0 , regardless of asymmetries in information). In that case, overvaluation would not result in social losses. The conflict between manager and shareholder interests, however, implies that companies may use excess cash to finance unprofitable projects in their own industries or to make unprofitable acquisitions. See Michael C. Jensen, *Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers*, 76 AM. ECON. REV. 323 (1986) (providing theoretical and empirical evidence that managers invest excess cash flow in unprofitable projects). Because companies must disclose the anticipated use of proceeds from public offerings, companies may prefer not to announce that they are raising funds to buy treasury bonds (or to fund similar investments) since this would strongly indicate that the company is overvalued. See, e.g., *Form S-1 Registration Statement Under the Securities Act of 1933*, 2 Fed. Sec. L. Rep. (CCH) ¶ 7123 (July 24, 1991) (imposing requirement to disclose use of proceeds). Even if companies invest excess capital in break-even projects, overvaluation would result in wasteful expenditures necessary to raise the excess capital.

137. See Clifford W. Smith, Jr. & Jerold B. Warner, *On Financial Contracting: An Analysis of Bond Covenants*, 7 J. FIN. ECON. 117, 136-38 (1979) (describing bond covenants that limit ability to issue further debt).

138. See Nevins D. Baxter, *Leverage, Risk of Ruin and the Cost of Capital*, 22 J. FIN. 395, 396-97 (1967).

139. Leveraged companies have an incentive to invest in overly risky projects because any gains from these projects accrue to shareholders, whereas losses may be borne by the companies' creditors. See Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure*, 3 J. FIN. ECON. 305, 334 (1976). For other forms of agency costs of debt, see *id.* at 337-42 (stating that debt may result in monitoring and bonding costs stemming from overleverage); Stewart C. Myers, *Determinants of Corporate Borrowing*, 5 J. FIN. ECON. 147, 149 (1977) (asserting that debt may result in passing up valuable investment opportunities).

more liquid form of investment than other instruments (such as stocks sold to venture capitalists or bonds).¹⁴⁰

Indeed, although equity is not the primary source of investment capital, about \$40 billion of new equity is issued to the public each year.¹⁴¹ To be sure, this figure is significantly smaller than the approximately \$450 billion per year companies spend on investments.¹⁴² But even if small in relation to total investment volumes, the market for new equity is very important.

Thus, despite the existence of alternative sources of capital, inaccurate stock prices may lead to significant misallocations of capital. Companies whose stock is overvalued may raise too much equity and overinvest. On the other hand, companies whose stock is undervalued may find it costly or impracticable to obtain sufficient capital from alternative sources, and thus underinvest.

In addition, some commentators have suggested that the mere fact that the stock price of a company is too low itself impedes the company's ability to raise outside capital of any kind.¹⁴³ Clearly, the stock price of a publicly traded company affects its ability to raise money from equity sold in a private placement.¹⁴⁴ However, the stock price has no discernible impact on internally generated cash flows, which are the dominant source for the firm's capital requirement.¹⁴⁵ And the impact of stock prices on the company's ability to incur debt (the second most important source of capital) is questionable for both theoretical and empirical reasons.

140. To the extent that companies raise capital from such alternative sources despite these shortcomings, society may suffer losses from increased bankruptcy costs, increased agency costs, losses from undiversified portfolios, or decreased liquidity.

141. From 1985 to 1988, the average annual value of newly issued common stock was about \$40 billion. U.S. BUREAU OF THE CENSUS, STATISTICAL ABSTRACT OF THE UNITED STATES: 1990, at 512 (1990) [hereinafter STATISTICAL ABSTRACT].

142. See RICHARD A. BREALEY & STEWART C. MYERS, PRINCIPLES OF CORPORATE FINANCE 313 (3d ed. 1988).

143. See, e.g., KRIPKE, *supra* note 9, at 123 (arguing that share prices themselves will affect price of alternative sources of capital); Meritt B. Fox, *Shelf Registration, Integrated Disclosure, and Underwriter Due Diligence: An Economic Analysis*, 70 VA. L. REV. 1005, 1017 (1984) (stating that market value of equity affects borrowing power and interest rate).

144. Even though equity sold in a private placement is sold in a different market, the stock price of such equity in the public market will almost surely affect the price at which the company can privately place its equity. The stock price in the public market will also affect the company's ability to sell securities convertible into its equity, such as warrants or convertible bonds.

145. See Stout, *supra* note 14, at 648 ("Operating revenues finance an average of 61% of corporate expenditures.").

First, a higher stock price, even if it represents a higher fundamental share value, does not imply that a company is a better credit risk.¹⁴⁶ Assume, for example, that Alpha Inc.'s assets are certain to have a value of \$50 million next year, while Beta Inc.'s assets have an equal likelihood of having a value of either \$10 million or of \$90 million. Both companies have \$20 million in debt that is due a year from now. The expected future value of Alpha's equity is \$30 million; the expected future value of Beta's equity is \$35 million.¹⁴⁷ But even though Alpha's equity value is lower than Beta's, Alpha is a much better credit risk: A lender can give Alpha up to \$20 million and be sure to be repaid in full, whereas any money lent to Beta will be fully repaid only if its assets turn out to be worth \$90 million.

Second, lending decisions and interest rates are primarily based on an evaluation of the company's balance sheet (e.g., on the value of its assets, liabilities, operating cash flows, and interest coverage) and on independent cash flow projections.¹⁴⁸ The role of stock prices, if they play any role at all, is minor. Moody's, for example, considers in its bond ratings quantitative factors such as operating income as percentage of sales, gross cash flow as a percentage of debt, and book capitalization in addition to qualitative factors. Stock prices do not figure into the calculation.¹⁴⁹ Thus, it is unlikely that a company has less ability to raise debt merely because its stock is underpriced.¹⁵⁰

2. *Firm Commitment Underwriting.* Companies often issue stock through a firm commitment underwriting, in which the underwriter purchases the stock from the company and then resells it to investors. Thus, the direct link between the market price of stock and the proceeds from the stock offering to the company is severed. The amount a company receives for its stock depends on the price negotiated with the underwriter, rather than on the price at which the stock trades on the market.¹⁵¹

146. See Fischer Black & Myron Scholes, *The Pricing of Options and Corporate Liabilities*, 81 J. POL. ECON. 637, 650-51 (1973).

147. Beta shareholders have a 50% chance of getting \$70 million (\$90 million less the \$20 million debt).

148. See Kenneth B. Davis, Jr., *The Status of Defrauded Securityholders in Corporate Bankruptcy*, 1983 DUKE L.J. 1, 29-30.

149. See HUGH C. SHERMAN, HOW CORPORATE AND MUNICIPAL DEBT IS RATED 27-37 (1976).

150. See Stout, *supra* note 14, at 648-51. However, the same factors that cause a company's stock to be undervalued, e.g., unduly negative earnings projections, may impede a company's ability to raise debt, and the reverse may also be true. See *id.* at 648 (noting that factors that cause overvaluation may improve ability to borrow).

151. See 1 LOSS & SELIGMAN, *supra* note 2, at 324.

Although in a firm commitment underwriting stock prices and proceeds from the stock offering are no longer directly connected, stock prices nevertheless have an important effect on capital allocation. The price an underwriter is willing to pay for stock in a firm commitment underwriting depends on the price that it expects to receive when it sells the stock to the public. If the underwriter believes that it can sell 100,000 shares of a company at \$100 per share, it will offer a higher price than if it believes that the shares will only fetch \$85.

Moreover, firm commitment underwriting, although important, is only one of several distribution techniques.¹⁵² Other common techniques include best-efforts underwriting, in which the underwriter acts as agent for the company in selling stock to the public,¹⁵³ and shelf registration, which permits companies to sell securities continually over longer periods of time in light of existing market conditions.¹⁵⁴ In these types of offerings, the stock price directly affects the proceeds received by the company.

C. *Kinds of Stock Price Inaccuracies and Capital Allocation*

Because inaccurate stock prices can result in a misallocation of capital, it is important to identify the kinds of stock price inaccuracies that are likely to induce such losses. In particular, the significance of the timing of inaccuracies and whether mispricings are predicted by underwriters are issues worthy of further analysis.

1. *The Timing of Inaccuracies.* Stock prices affect the allocation of capital to companies because higher stock prices enable a company to raise more capital by selling the same number of shares.¹⁵⁵ But stock prices affect capital allocation only during times in which a company actually issues, or considers issuing, shares.¹⁵⁶ As long as a company does not issue or consider issuing shares, the price at which its stock

152. See *id.* at 317-72 (discussing alternative methods of distribution).

153. See *id.* at 341-42.

154. See 17 C.F.R. § 230.415 (1991); see also 1 LOSS & SELIGMAN, *supra* note 2, at 353-72.

155. See *supra* notes 126-33 and accompanying text.

156. Despite the relative rarity of public issuances of stock, it may be argued that companies continuously consider raising capital by selling stock to the public, and that stock prices therefore always matter. But even if one assumes that companies continuously consider selling stock, it is only important that companies know that the stock price will be accurate when they go ahead and actually issue stock. Thus, for example, inaccuracies in the secondary market that are known to disappear whenever companies issue stock (e.g., because companies who issue stock have to disclose non-public information that would otherwise not be reflected in the stock price) would not lead to capital misallocation.

trades *among investors* will generally not influence the amount of capital allocated to the company.¹⁵⁷

This limitation on the impact of stock prices on capital allocation to periods in which companies issue or consider issuing stock has important consequences. To foster an efficient allocation of capital, it is sufficient that stock prices are accurate whenever companies actually issue stock. As long as managers know that the price at which they can issue stock will always be accurate, they have incentives to issue stock only if they have profitable investment opportunities.¹⁵⁸ Thus, to induce an efficient allocation of capital, it is of paramount importance that stocks are accurately priced whenever companies issue stock; but it is not necessary that stock prices always be accurate.¹⁵⁹

157. However, stock prices in the secondary market may otherwise influence investment decisions. *See infra* notes 231-55 and accompanying text (discussing stock price oriented managerial behavior); *infra* notes 291-304 and accompanying text (discussing impact of stock prices on capital budgeting decisions).

158. Some commentators have failed to distinguish stock price accuracy at public offerings from accuracy in general, and seem to imply that stock prices must always be accurate to lead to an efficient allocation of capital. *See, e.g.,* Barry, *supra* note 14:

When stocks and their prospects for success or failure are evaluated by a process that reflects all available information, investors can more rationally compare competing companies. Given existing levels of risk aversion, investment funds will migrate to those companies and projects that seem most likely to succeed. This continual redirection of capital from less promising to more promising pursuits benefits the investor and society as a whole because both maximize welfare by allocating scarce resources to investment opportunities promising the greatest return.

Id. at 1317; Brudney, *supra* note 14:

[T]he sooner [new information] is found, the more accurately it is appraised, and the more immediately it induces a purchase or sale, the more precisely will the market price of the securities correspond to the value of the enterprise. The market will thus function efficiently to allocate savings to enterprises which are more profitable and divert them from enterprises which are less profitable.

Id. at 341. *But see* Fox, *supra* note 143, at 1023-24 (arguing that "the price of an issuer's securities has little effect on whether it will engage in any particular investment"); Pozen, *supra* note 50, at 939 (arguing that the only direct influence of stock price on capital allocation is when companies raise capital by issuing new stock); Stout, *supra* note 14, at 651 (claiming that stock prices can influence capital allocation only when companies raise or consider raising new stock).

159. To be sure, stock price accuracy at public offerings is tied to stock price accuracy in the aftermarket. For example, the price at which a stock is expected to trade in the aftermarket will influence the price at which the stock is issued. And, in determining that stock market price, investors (and underwriters) may look to the price at which comparable stocks trade in the aftermarket. This does not mean, however, that the same kinds of inaccuracies present at public offerings must also be present in the aftermarket, and vice versa. Both differential legal regulation and differential institutional features (e.g., different trading volumes) may cause inaccuracies at public offerings to differ from inaccuracies in the aftermarket. Indeed, empirical studies indicate that the stock price at an initial public offering may be less accurate than the stock price in the aftermarket. *See, e.g.,* Roger G. Ibbotson, *Price Performance of Common Stock New Issues*, 2 J. FIN. ECON. 235 (1975); J.G. McDonald & A.K. Fisher, *New-Issue Stock Price Behavior*, 27 J. FIN. 97 (1972). This discrepancy may be explained by institutional features of the underwriting process or by a higher degree of asymmetric information at initial public offerings. *See* Ibbotson, *supra*, at 262 (attributing discrepancy to the institutional rule that maximum filing price must be set two weeks in advance of actual

Stock issuances are rather infrequent events for a corporation. Many companies issue stock to the public only once during their corporate existence—when they “go public” in an initial public offering. Other companies issue stock on multiple occasions; but even for those companies, public offerings are exceptional occurrences.¹⁶⁰ Thus, although the market for newly issued stock is important, it is dwarfed by the secondary market in which investors trade previously issued stock among themselves.¹⁶¹

The special importance of accurate stock prices during public offerings, and the relative magnitudes of the market for newly issued shares compared to the secondary market, have implications for the efficient design of securities regulations. A legal rule that enhances the accuracy of stock prices of companies *at the time of a public offering* may result in substantial social benefits; but, because compliance with the rule is limited to special occasions, it may involve significantly lower costs than a legal rule enhancing stock price accuracy in general. Thus, it may be desirable to target legal rules to companies engaged in public offerings.¹⁶²

In fact, a number of legal rules are targeted in exactly this manner. Companies proposing to issue stock to the public have to comply with

offering); Kevin Rock, *Why New Issues Are Underpriced*, 15 J. FIN. ECON. 187 (1986) (attributing discrepancy to asymmetric information).

160. See Stout, *supra* note 14, at 647 (reporting that publicly-held corporations publicly issue common stock on average once every 18 years).

161. From 1985 to 1988, the average annual value of newly issued common stock was about \$40 billion. STATISTICAL ABSTRACT, *supra* note 141, at 512. The average annual market value of stocks traded on securities exchanges during that period was about \$1.7 trillion. *Id.* at 510.

162. Similarly, open market stock repurchases and self-tender offers by companies can lead to a misallocation of capital if companies try to maximize the wealth of their remaining shareholders. For example, if XYZ Corp. is undervalued, it may repurchase its stock rather than use its funds for profitable investments. Open market repurchases, although relatively frequent, generally involve small amounts of stock. See Douglas V. Austin, *Treasury Stock Repurchase by American Corporations: 1961-67*, FIN. EXECUTIVE, May 1969, at 41, 42-46; Samuel S. Stewart, Jr., *Should a Corporation Repurchase Its Own Stock?*, 31 J. FIN. 911, 914 (1976). These transactions do not seem primarily motivated by undervaluation. See Austin, *supra*, at 41 (noting that repurchased stock is generally used to fund stock options and for-stock acquisitions); Leo A. Guthart, *Why Companies Are Buying Back Their Own Stock*, INVESTMENT MGMT., Mar./Apr. 1967, at 105 (reporting that companies in contracting industries repurchase shares for lack of investment opportunities). Self-tender offers, on the other hand, tend to involve larger amounts of stock and do seem motivated by low stock prices. See Larry Y. Dann, *Common Stock Repurchases: An Analysis of Returns to Bondholders and Stockholders*, 9 J. FIN. ECON. 113, 115, 136 (1981); Theo Verinaelen, *Common Stock Repurchases and Market Signaling: An Empirical Study*, 9 J. FIN. ECON. 139, 179 (1981). However, these transactions are relatively rare. See Ronald W. Masulis, *Stock Repurchase by Tender Offer: An Analysis of the Causes of Common Stock Price Changes*, 35 J. FIN. 305, 307 (1980). Thus, special legal regulations for self-tender offers (and, to a lesser extent, for open market purchases) may be desirable. Presently, self-tender offers are subject to special regulations. See, e.g., 17 C.F.R. § 240.13e-1, .13e-3, .13e-4, .14e (1991). Open market repurchases, although subject to the insider trading prohibition, are otherwise largely unregulated.

more stringent disclosure requirements than do companies whose stocks are merely traded among investors.¹⁶³ And certain trading activities—such as short sales¹⁶⁴ and repurchases by the company of its own shares¹⁶⁵—are prohibited as “manipulative” during public offerings, although they are legal at other points in time. The foregoing analysis suggests one reason why this stricter regulation of companies engaged in raising capital in the stock market may be justified.

2. *Expected Deviations from Fundamental Value.* The practice of firm commitment underwriting points to another important distinction between kinds of inaccuracies. As explained, in a firm commitment underwriting, the amount of capital the company receives when selling stock depends on the price negotiated between the company and the underwriter.¹⁶⁶ Underwriters base that price on the stock price they expect to receive from the public when they resell the stock.¹⁶⁷ To induce an efficient allocation of capital, it is therefore more important that an underwriter *expects* to receive the fundamental stock value when it resells stock to the public, than that the underwriter *actually* receives the fundamental value.¹⁶⁸ That is, even inaccurate stock prices may lead to an efficient capital allocation as long as the underwriter does not anticipate overvaluation or undervaluation.

Manifestations of inaccuracies differ in the degree to which they lead to anticipated misvaluations. Consider, for example, systematic discounts¹⁶⁹ and random short-run mispricing.¹⁷⁰ In a stock market characterized by systematic discounts, stocks generally trade below their fundamental value. Thus, an underwriter would expect to receive less than a stock's fundamental value when selling the stock to the public and

163. Compare Form S-1 Registration Statement Under the Securities Act of 1933, 2 Fed. Sec. L. Rep. (CCH) ¶ 7123 (July 24, 1991) (listing information required in prospectus) with Form 10-K Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934, 4 Fed. Sec. L. Rep. (CCH) ¶¶ 31,101-07 (Mar. 6, 1991) (listing information required in annual reports to SEC).

164. See 17 C.F.R. § 240.10b-21(T) (1991).

165. See *id.* § 240.10b-6.

166. See *supra* text accompanying note 151.

167. The price paid by the underwriter will, of course, also depend on other factors, such as profit margins in the underwriting industry. Furthermore, the possible returns in the public market that the underwriters expect to receive may differ from the price underwriters actually receive because the stock's fundamental value has changed, because underwriters misassessed the fundamental value, or because of unanticipated mispricing. This may create risks to underwriters for which they must be compensated.

168. Expected, rather than actual, stock prices will also influence capital allocation under other distribution techniques to the extent that companies are committed to sell stock before they know the price they will receive.

169. See *supra* text accompanying notes 90-92.

170. See *supra* text accompanying notes 87-88.

will accordingly lower the price it will pay to the company. Indeed, any underwriter that paid fundamental value for the stock, but had to resell it at the "discounted" price to the public, would quickly go out of business.¹⁷¹

Random short-run mispricing, on the other hand, may not lead to predictable overvaluation or undervaluation. Even if underwriters are aware that stocks are generally mispriced in this fashion, they may have no basis for predicting whether the stock of any particular company will be undervalued or overvalued.¹⁷² Thus, the price the underwriter would expect to receive from the public will equal the stock's fundamental value. The misallocative effects of random short-run mispricing may therefore be significantly less severe than those of systematic discounts.¹⁷³

D. *Insider Trading and the Misallocation of Capital*

Even if insider trading would serve to align stock prices with their fundamental values, a repeal of the disclose or abstain rule is not likely to improve capital allocation for two reasons. First, a repeal of the rule would generally not make it legal for insiders to trade during public offerings. Second, even if such trades were legal, they would not significantly affect the proceeds a company receives from selling its stock.

During public offerings, companies and their officers and directors are subject to a number of special regulations. In particular, the securities laws require companies selling stock to the public to disclose directly a wide range of material information.¹⁷⁴ Furthermore, the company and other interested persons are generally prohibited from buying or bidding for stock while the stock is sold to the public.¹⁷⁵ Thus, the mere repeal of

171. In determining the price they are willing to pay for stock of companies that go public, underwriters may examine the stock price of publicly traded companies in the same industry. Thus, inaccuracies that systematically affect such companies, such as industry-wide mispricings, are also likely to cause capital misallocation.

172. To be sure, there are instances of random short-run mispricing in which an underwriter would have such basis, e.g., if it knew the information that accounted for the random short-run mispricing. Nevertheless, random short-run mispricing is less likely to involve predictable misvaluations than discounts.

173. Note that Rule 415 under the Securities Act of 1933, 17 C.F.R. § 230.415 (1991), which permits some companies to shelf register stock and to sell it later on short notice with little additional disclosure, might make it easier to exploit random short-run mispricings. Several commentators have advocated a mandatory two day waiting period before stocks can be sold under Rule 415. See, e.g., Gordon & Kornhauser, *supra* note 11, at 818-23.

174. See Securities Act of 1933, §§ 11-12, 15 U.S.C. §§ 77k, 77l (1988) (requiring affirmative disclosure of material facts). The company's directors and principal officers are among those liable for violations of these disclosure requirements. See *id.* § 11(a)(2), 15 U.S.C. § 77k(a)(2).

175. See 17 C.F.R. § 240.10b-6 (1991).

the disclose or abstain rule will generally not be sufficient to permit insider trading during public offerings.¹⁷⁶

Second, at least in initial public offerings,¹⁷⁷ trades by insiders would tend not to operate quickly enough to influence the price received by the company or the underwriter.¹⁷⁸ It generally takes several days (or even weeks) before investors learn of the insiders' trading activities and accordingly adjust their stock valuations.¹⁷⁹ But companies and underwriters selling stock to the public generally complete their sales within one day. Thus, although insider trading may influence stock prices in the secondary market (to the benefit or detriment of the investors who bought the stock), it will usually not operate quickly enough to influence the price received by the company or the underwriter in the public offering.¹⁸⁰

IV. LIQUIDITY

Even though stock prices do not always influence the allocation of capital to firms, they always determine the terms at which investors trade stock among themselves. Inaccurate stock prices cause social losses by biasing these terms. Although I argue that a trade at an inaccurate price does not in itself create social losses, an anticipation of trading on unfavorable terms could make investors reluctant to trade stock and therefore reduce liquidity.¹⁸¹ Such a reduction in liquidity, in turn, constitutes a societal loss.

176. Opponents of the insider trading prohibition may, of course, argue that these other legal rules should also be repealed.

177. In seasoned public offerings of stock that are already traded, insider trades occurring sufficiently prior to the public offering may affect the stock price received by the company or the underwriter.

178. For the sake of argument, I assume that underwriters would adjust the price they are willing to pay for the stock if insider trading were to lead to a timely adjustment of the share price.

179. Insiders can have up to 40 days to file public reports on trading activity. See Securities Exchange Act of 1934, § 16(a), 15 U.S.C. § 78p(a) (1988) (requiring reports to be filed within 10 days after the end of the calendar month in which trade occurred). Other mechanisms through which insider trades influence stock prices, such as trade and price decoding, will also tend to involve time lags. See Gilson & Kraakman, *supra* note 13, at 572-79.

180. In addition, because the kind of material non-public information on which insiders would trade will tend to be firm-specific, it is unlikely that permitting insider trading will affect the comparative pricing by underwriters described *supra* in note 179.

181. The concept of liquidity used in this Part differs from the concept of liquidity crunches discussed in Part III. Liquidity here refers to the ease (and cost) of converting one's stock into cash. Liquidity crunches occur when the number of investors who want to convert their stock into cash (or their cash into stock) outstrips the capacity of the stock market and, as a result, such conversions become more difficult and costly.

A. *Stock Prices, Trading, and Liquidity*

The mere fact that an investor buys overvalued stock (or sells undervalued stock) does not by itself constitute a loss to society. To be sure, if *A* buys 100 shares of XYZ Corp. for \$50 a share when the fundamental share value is \$40, *A* will have lost \$1,000. If stock prices had been accurate, she could have bought the same shares for \$1,000 less. But for each such buyer, there is a seller, call her *B*, who gained \$1,000 by selling the overvalued stock to *A*. Thus, from the perspective of society, trades at inaccurate prices by themselves merely result in the transfer of wealth from investors who buy overvalued (or sell undervalued) stock to investors who sell overvalued (or buy undervalued) stock.

Some commentators have concluded that because the primary effect of trades at inaccurate prices is to transfer wealth between investors, even the prospect of such trades does not cause social losses.¹⁸² These commentators argue that investors, as a group, are as likely to gain from buying at a low price as they are to lose from selling at that low price. Therefore, they do not care whether or not stock prices are accurate.¹⁸³

Yet this argument overlooks the fact that *an individual investor's* odds of gaining from trading at inaccurate prices may easily differ from her odds of losing. Investors are frequently aware when they have special reasons to believe that a certain stock is mispriced. For example, *B* may have reason to believe that XYZ Corp. is overvalued because she possesses undisclosed information or has received investment advice from an expert stock analyst. *B* will therefore expect to gain by selling stock of XYZ Corp. Correspondingly, an investor who has no special reason to believe that XYZ Corp. is undervalued or overvalued, but knows that others have such reasons, would expect to lose. I will refer to this latter group of investors as "unsophisticated" investors.

To be sure, no one forces an unsophisticated investor to trade. Indeed, because such an investor expects, on average, to lose each time she buys or sells stock, she will only trade if other benefits make up for these expected losses. Thus, a rational unsophisticated investor will tend to

182. See, e.g., Coffee, *supra* note 14, at 734 (arguing that as long as security prices are inaccurate but unbiased, only cause for legal intervention is to improve capital allocation); Stout, *supra* note 14, at 672 (claiming that stock price inaccuracy does not affect investors' average returns as long as overvaluation is as likely as undervaluation).

183. See Stout, *supra* note 14, at 672 ("[Inaccurate prices] should not erode investor confidence in the market's expected returns.").

refrain from trading¹⁸⁴—and suffer a corresponding reduction in the liquidity of her investments.¹⁸⁵

Unsophisticated investors' reluctance to trade is of particular concern because it tends to produce both snowball effects and negative externalities. As the least sophisticated investors stop trading (to avoid expected losses from trading), other investors will find that trading has become a losing proposition. These other investors may have expected to lose from trading with more sophisticated investors, but to gain from trading with the least sophisticated ones—and to come out even on balance. However, once the least sophisticated investors cease trading, these other investors become the least sophisticated among those still participating in trading activities—and thus expect to lose from trading. As this second group quits trading, a third group of investors becomes the least sophisticated among those still trading, and so on.¹⁸⁶ As a result, an increasing number of investors experience a decline in liquidity.

Further, an investor's unwillingness to trade also decreases the liquidity of the investments held by *other* investors. It takes two to trade and tango. As some investors stop trading because they anticipate trading losses, the remaining investors (who do not anticipate losses or want to trade anyway) have fewer potential trading partners and may thus find it harder to buy or sell stock. Thus, even investors who are indifferent to the prospect of having to trade at inaccurate prices would endure liquidity reductions.

B. *Social Losses from Reduced Liquidity*

The reduction in liquidity caused by trading at inaccurate stock prices is significant because investors value more liquid investments higher than less liquid ones.¹⁸⁷ In particular, two costs may result from a

184. See, e.g., Brudney, *supra* note 14, at 356 (arguing that a rational uninformed investor will refrain from trading or demand a risk premium); Carlton & Fischel, *supra* note 42, at 879 (stating that uninformed investors should realize that they could be better off by not trading); Roy A. Schotland, *Unsafe at Any Price: A Reply to Manne, Insider Trading and the Stock Market*, 53 VA. L. REV. 1425, 1441 (1967) (noting that the less outside shareholders trade, the less they will be subject to exploitation by insiders with valuable information).

185. See Lawrence R. Glosten, *Insider Trading, Liquidity, and the Role of the Monopolist Specialist*, 62 J. BUS. 211, 214 (1989) (arguing that asymmetric information reduces market liquidity).

186. In extreme cases, the whole stock market could completely unravel: Nobody will be willing to trade because the willingness of the counterparty to trade is taken as evidence that the counterparty knows more about the stock's true value. See *id.* (observing that in extreme instances of asymmetric information, the market may close down altogether).

187. As investors pay less for illiquid stock, the costs of reduced liquidity of stocks may ultimately be borne by the company. See Douglas W. Diamond & Robert E. Verracehia, *Disclosure, Liquidity, and the Cost of Capital*, 46 J. FIN. 1325 (1991) (noting that increased liquidity can reduce firm's cost of capital).

decline in liquidity: transaction costs of trading; and costs of holding non-optimal portfolios. I will refer to these social costs from reduced liquidity as "loss of liquidity" costs.

A high degree of liquidity means that investors can change the form in which they hold their wealth easily and at a low cost. Therefore, one social benefit of liquidity lies in the lower transaction costs of "liquidating" one's investment. Compare, for example, the costs of selling \$200,000 of highly liquid IBM stock with those of selling the same amount of stock of XYZ Corp., a small, infrequently traded company. IBM stock can be sold quickly with payment of a relatively modest brokerage fee. To find a buyer for the XYZ stock, however, one may have to search for a considerable period of time and pay a significantly higher brokerage fee.¹⁸⁸

Second, high liquidity enables investors to adjust their portfolios (the composition of their investments) cheaply. Investors may want to change their portfolios for a number of reasons: to obtain more cash for consumption; to invest newly acquired wealth; to exploit profitable investment opportunities;¹⁸⁹ to accomplish a greater degree of diversification;¹⁹⁰ or to change the overall level of portfolio risk. But to the extent that a change in the composition of one's investments engenders costs, investors may, in order to avoid these costs, hold non-optimal portfolios. Together with the increase in transaction costs caused by illiquidity, such losses from holding non-optimal portfolios constitute "loss of liquidity" costs to society.¹⁹¹

C. *Kinds of Inaccuracies and Loss of Liquidity Costs*

Stock price inaccuracies reduce liquidity only to the extent that they cause certain "unsophisticated" investors to anticipate to lose on average whenever they trade. Thus, it is important to identify the types of inaccuracies that are likely to lead to such anticipations. Consider first inaccuracies caused by non-public information. In stock markets characterized by a significant degree of non-public information, investors without such information would expect to lose by trading.¹⁹² The extent

188. Illiquidity may also lead to higher transaction costs of trading in the form of larger bid-ask spreads. See Lawrence R. Glosten & Lawrence E. Harris, *Estimating the Components of the Bid/Ask Spread*, 21 J. FIN. ECON. 123 (1988).

189. If stock prices are accurate, such opportunities cannot arise in the stock market, but may arise in other markets.

190. See generally Pozen, *supra* note 50, at 940-53 (discussing lower risk associated with portfolio diversification).

191. Loss of liquidity costs may also manifest themselves in the cost of activities designed to lower transaction costs and costs of holding non-optimal portfolios.

192. Most investors know whether they possess non-public information.

of these trading losses would depend on how much stock prices deviate from their fundamental values, how many investors possess non-public information, and how many of these investors trade. In general, the higher the gains to the investors with more information, the greater the expected trading losses—and thus the resulting "loss of liquidity" costs¹⁹³—to those with less.¹⁹⁴

Non-public information thus does not necessarily result in "loss of liquidity" costs. If stock prices are inaccurate because they do not reflect some non-public information, *but no person who possesses that information trades*,¹⁹⁵ uninformed investors would have no reason to anticipate a loss by trading. That is, as long as only uninformed investors trade, the playing field is even: Each uninformed investor is as likely to gain from buying undervalued stock as she is to lose from selling undervalued stock.

Information misassessment and speculative mispricing can similarly create "loss of liquidity" costs. If certain sophisticated market participants have superior abilities to assess information, and other unsophisticated investors are aware that they have no such abilities,¹⁹⁶ unsophisticated investors would anticipate to lose by trading. Likewise, unsophisticated investors that are relatively inept in divining market psychology may anticipate losses from trading in a market characterized by speculative mispricing.¹⁹⁷ Again, expected trading losses to unsophisticated investors will depend on the degree of mispricing and the extent of trading activity by the more sophisticated investors.¹⁹⁸

193. As discussed, the social "loss of liquidity" costs are distinct from the expected trading losses. *See supra* text accompanying notes 181-86.

194. *See* Glosten & Harris, *supra* note 188 (asserting that asymmetric information affects bid/ask spread).

195. More precisely, the information may have no impact on the person's decision whether or not to trade.

196. Of course, fewer investors may realize that they lack special abilities in assessing information than those that recognize they do not possess non-public information.

197. Presently, no legal rule prohibits sophisticated investors from exploiting their superior abilities in assessing information and divining market psychology. *See supra* note 32. Indeed, any such prohibition would be difficult to fashion and even harder to enforce.

198. Inaccuracies caused by liquidity crunches also involve "loss of liquidity" costs, although for somewhat different reasons. In liquidity crunches, stock prices are temporarily inaccurate because the stock market does not have enough short-term liquidity to satisfy onslaughts of demand for or supply of stock. Thus, strictly speaking, in the case of liquidity crunches, it is not inaccurate stock prices that cause a reduction in liquidity, but insufficient liquidity that results in inaccurate stock prices. Nevertheless, the same type of "loss of liquidity" costs are present during liquidity crunches. Investors who, say, would like to sell stock at the time of a supply crunch may have to incur increased transaction costs or decide to delay selling stock and suffer costs from holding a non-optimal portfolio.

D. *Insider Trading and Liquidity*

Permitting insider trading may serve to increase "loss of liquidity" costs because insiders will be able to exploit their possession of material non-public information to make trading profits. The insider's profit opportunities would persist either until the pertinent information is disclosed directly or until derivative disclosure causes the stock price to reflect the information. One effect of permitting insider trading may thus be to aggravate the expected trading losses to investors who do not possess insider information.

As explained, the extent of trading losses to uninformed investors depends on whether informed investors trade on the basis of their superior information.¹⁹⁹ Repeal of the insider trading prohibition permits "insiders"—prime candidates for possessing superior information—to trade on material undisclosed information. Assume that only insiders possess a certain item of material information. Then, even though permitting insider trading may lead to derivative disclosure of such information (and thereby cause the stock price to become more accurate), it would increase "loss of liquidity" costs.²⁰⁰

Insiders may, however, not be the only ones who possess an item of material information. Others (stock analysts or bystanders who overhear conversations among insiders) may, through their efforts or by luck, also learn of such information. These "outsiders" would generally be permitted to trade.²⁰¹ But trading by such outsiders may not effectively eliminate mispricings. First, special disclosure requirements applicable to insiders make insider trades more easily observable than outsider

199. See *supra* notes 192-98 and accompanying text.

200. Several commentators have argued that outsiders do not lose from insider trading. See, e.g., James D. Cox, *Insider Trading and Contracting: A Critical Response to the "Chicago School,"* 1986 DUKE L.J. 628, 635 & n.33 (arguing that insider trading is unlikely to result in "either preempting a price otherwise available to [the outside investor] or inducing [outside investors] to sell or purchase because of the increased activity in the stock"); Michael P. Dooley, *Enforcement of Insider Trading Restrictions*, 66 VA. L. REV. 1, 33 (1980) (finding no causal connection between insider trading and outsider loss because the trading does not affect outsiders' expectations); O'Connor, *supra* note 42, at 316 (arguing that there is no harm to outsiders because there is no causal connection between outsider's decision to buy or sell and insider's decision to trade on nonpublic information). These commentators contend that the decision by outsiders to trade is not affected by whether insiders trade, and that outsiders therefore cannot be harmed by insider trading. Despite its apparent popularity, this argument is fundamentally flawed. If insiders buy more undervalued stock, then as a matter of mathematical certitude some outsiders must either sell more of such stock or buy less of such stock. Other things being equal, the more profits insiders derive from such trades, the more losses outsiders suffer as a group. See William K.S. Wang, *Trading on Material Nonpublic Information on Impersonal Stock Markets: Who Is Harmed, and Who Can Sue Whom Under Rule 10b-5?*, 54 S. CAL. L. REV. 1217, 1235-36 (1981).

201. See *supra* note 31 (discussing what persons are traditionally prohibited from trading on material non-public information).

trades.²⁰² Secondly, trading by outsiders provides less of an indication that the stock of a company is misvalued than trading by insiders, because outsiders would be considered less likely than insiders to have superior knowledge about the company's value.²⁰³ Thus, absent insider trading, stocks may remain mispriced, and profitable trading opportunities may remain open longer. As a result, trading gains to informed outsiders in the absence of insider trading may be larger than the gains that insiders (and informed outsiders) would be able to derive if insider trading were permitted.²⁰⁴ Correspondingly, permitting insider trading may lower expected trading losses to uninformed outsiders and thus lead to a decline in "loss of liquidity" costs.

Assume, for example, that XYZ Corp. is engaged in preliminary merger negotiations that, if disclosed, would result in a \$5 increase in its stock price. Further assume that the only persons aware of these negotiations are insiders and *A*, a sophisticated stock analyst. If insider trading were permitted, insiders (and *A*) may be able to acquire, say, 100,000 shares of XYZ stock (and derive gains of \$500,000), before their trading activities cause the stock price of XYZ to increase by \$5. All other investors, as a group, would experience commensurate losses of \$500,000.²⁰⁵ But if insiders have to refrain from trading, *A* (who, as an outsider, would be permitted to trade) may succeed in buying, say, 150,000 shares of XYZ stock before the merger negotiations are announced, causing losses of \$750,000 to all other investors. (*A* may be able to buy more stock because, unlike trading by insiders, purchases of XYZ stock by *A* would not necessarily signal to other investors that XYZ is undervalued.)

Whether permitting insider trading increases or decreases liquidity therefore depends on the extent to which outsiders trade on material non-public information and on the extent to which trading by insiders moves stock prices to fundamental values more quickly than does trading by outsiders. These considerations have ramifications on the design and scope of the insider trading prohibition. First, it may be desirable to prohibit trading by insiders only with respect to knowledge that outsiders

202. See Securities Exchange Act of 1934, § 16(a), 15 U.S.C. § 78p(a) (1988) (requiring monthly filing for all owners of more than 10% of any issuer's class of stock).

203. Cf. Gilson & Kraakman, *supra* note 13, at 574 (noting that for trade decoding to be effective, uninformed traders must be able to identify who the informed traders are and to observe their activities).

204. See Carlton & Fischel, *supra* note 42, at 880.

205. As discussed, these \$500,000 would not constitute social losses. Rather, "loss of liquidity" costs result from outsider actions designed to avoid such losses.

are not likely to possess.²⁰⁶ Second, it may be desirable to require companies to disclose information when they have reason to believe that outsiders are trading on its basis.²⁰⁷

The present insider trading prohibition, to some extent, incorporates both of these measures. First, insiders are only prohibited from trading if they possess information that is not publicly available.²⁰⁸ Obviously, the likelihood that some outsiders possess information that is not publicly available is much lower than the likelihood that they possess information that is available to (though not known by) all investors.²⁰⁹

Second, a company may have an affirmative duty to disclose material information when it has reason to believe that significant trading is being conducted on its basis²¹⁰ or that someone within the company has

206. In this connection, it may also be easier for uninformed outsiders to overcome the informational advantages of informed outsiders than those of insiders. See Brudney, *supra* note 14, at 339-53. That is, uninformed outsiders may often be able to acquire the information known to informed outsiders, by, for example, conferring with an investment advisor or by investing in a mutual fund. On the other hand, it would be substantially more costly (and possibly illegal) for uninformed outsiders to obtain insider information (e.g., by bribing a corporate officer or by spying). See *id.* at 346 (noting that corporate insider has lawful monopoly on access to inside information). The cost to uninformed outsiders of becoming informed, however, forms a cap on the expected trading losses to uninformed outsiders: Outsiders who want to trade can always choose between becoming informed before trading (and suffer losses in the amount of the costs of becoming informed) and trading without becoming informed (and suffer expected trading losses). Informational advantages of outsiders may thus result in lower expected trading losses—and therefore in lower “loss of liquidity” costs—than the losses caused by informational advantages of insiders.

207. Another design option might include requiring outsiders, in certain circumstances, to file reports on their trading activities. Or one might seek to prohibit outsider trading. See 17 C.F.R. § 240.14e-3 (1991) (outsider trading on nonpublic tender offer information prohibited). See generally Barry, *supra* note 14 (discussing extension of Rule 10b-5 to outsider trading). Whether prohibiting outsider trading is desirable depends in part on whether outsider trading removes undesirable stock price inaccuracies. Note, in this respect, one distinction between insider trading and outsider trading. The insider trading prohibition generally does not affect the level of information known to insiders (because insiders acquire such information “on the job”), and may induce direct disclosure of the information by insiders. See *supra* text accompanying notes 30-32. A general outsider trading prohibition may, however, remove incentives for outsiders to study the economic prospects of companies (by depriving them of the ability to trade on the basis of their discoveries). As outsiders will not bother to acquire outsider information, prohibiting outsider trading would generally not induce direct disclosure of the information by outsiders. See Brudney, *supra* note 14, at 339-43.

208. See *supra* text accompanying notes 30-32.

209. The possibility of outsider trading may also explain why special skills in assessing information are not considered “material information.” See *supra* note 32. Because many outsiders (such as stock analysts, industry experts, and economic consultants) will be as apt as, or even better than, insiders in assessing information, prohibiting trading on the basis of information assessments may increase “loss of liquidity” costs.

210. See, e.g., *Report of Investigation in the Matter of Sharon Steel Corp. as it Relates to Prompt Corporate Disclosure*, Exchange Act Release No. 18271, [1981 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 83,049 (Nov. 19, 1981) (reporting view of SEC that material information should be promptly released following unusual stock activity).

leaked the information.²¹¹ By reducing one's ability to exploit informational advantages, such a duty would lower expected trading losses to unsophisticated investors.²¹² Thus, such a duty may enhance the liquidity of the market while imposing a lesser burden on companies than a general duty to disclose all material information.

V. Risk

Inaccurate stock prices may increase risk. Because investors are risk averse, any increase in the level of risk that investors have to bear constitutes a social loss. In Section A, I introduce the economic concept of risk and review which forms of risk have to be borne by investors. Section B examines the types of inaccuracies that are likely to raise such forms of risk. Section C discusses the effect of insider trading on risk.

A. Risk and Social Costs

Stock price volatility creates uncertainty: At any point in time, investors do not know whether the price of their stock tomorrow will be higher than, lower than, or equal to the stock price today. Economists refer to the uncertainty created by such (unpredictable) volatility as "risk."²¹³ Holding a stock that is highly volatile—one whose price tomorrow will either double or decline to zero—is riskier than holding a stock whose price tomorrow may go up or down by merely one percent.²¹⁴

Investors are generally risk averse.²¹⁵ Other things being equal, they prefer investments that (on the whole) involve less risk to those that involve more risk. Because investors dislike risk, they have to be compensated for bearing more risk by a higher expected rate of return on their investments. This increase in the rate of return—the risk premium²¹⁶—is a measure of the social costs of risk.

211. See *Greenfield v. Heublein, Inc.*, 742 F.2d 751, 759 (3d Cir. 1984) (holding that unusual trading activity does not impose duty to disclose unless company has indications that information was leaked), *cert. denied*, 469 U.S. 1215 (1985).

212. Of course, other considerations, such as the possibility that the value of information may be destroyed by disclosure, may counsel against such a rule. See *supra* text accompanying notes 109-12.

213. See COPELAND & WESTON, *supra* note 11, at 85-86. This economic use of the term risk differs from the colloquial use. Colloquially, risk often refers to the possibility of losses rather than to the volatility of returns.

214. See *id.* at 146-53 (describing how to measure risk for a single investment).

215. See *id.* at 86.

216. "Risk premium" has been defined as the amount an individual would be willing to pay to avoid a gamble. It is measured by the difference between expected wealth, given the gamble, and expected wealth without the gamble. *Id.* at 87.

The riskiness of a share of stock is comprised of two portions: unsystematic and systematic risk. Unsystematic risk generally results from uncertainty over events that affect the stock price of only a few companies.²¹⁷ Unsystematic risk thus dissipates as investors diversify. Because the stock of any single company constitutes only a small part of a well-diversified portfolio, the value of such a portfolio is only minimally affected by unsystematic risk (even if this risk has a major impact on the stock price of a particular company). Unsystematic risk is therefore also referred to as diversifiable risk.

Systematic risk generally results from events that affect the stock price of a large number of companies in a similar way. Because the stock prices of many companies react alike to such events, even the value of a diversified portfolio is highly sensitive to the occurrence of such events. Thus, investors have to bear systematic, or undiversifiable, risk even if they hold a fully diversified portfolio.²¹⁸

Because investors can avoid bearing diversifiable risk, they generally do not earn any risk premium for bearing such risk.²¹⁹ Systematic (or undiversifiable) risk, however, has to be borne by some investors, who must be compensated for bearing such risk. Thus, to the extent that stock price inaccuracies increase undiversifiable risk, they result in losses to society.

B. *Inaccurate Stock Prices and Risk*

Stock price inaccuracies increase the riskiness of a stock if the inaccurate stock price is more volatile than the fundamental stock value and decrease it if the inaccurate stock price is less volatile than the fundamental value. But to alter undiversifiable risk, an inaccuracy would have to affect the volatility of portfolios consisting of stock of many companies, rather than merely the volatility of the price of individual stocks. Thus, undiversifiable risk increases if an inaccuracy results in excess market volatility. Undiversifiable risk decreases if aggregate stock prices fluctuate less than fundamental values.²²⁰

217. Events that cause the value of some companies to rise and the value of others to fall commensurately also create unsystematic risk.

218. See COPELAND & WESTON, *supra* note 11, at 198-202 (discussing portfolio risk); see also POZEN, *supra* note 50, at 940-53 (describing how diversification lowers risk). Note that no individual investor has to bear undiversifiable risk; an individual investor may be able to hold a portfolio of investments that do not involve risk (e.g., treasury bonds). However, all undiversifiable risks present in the economy must be borne by some investors.

219. See COPELAND & WESTON, *supra* note 11, at 212-17.

220. Inaccurate stock prices could, for example, be less volatile than fundamental values if investors "underreact" to new information. See KAHNEMAN & TVERSKY, *supra* note 83, at 14-18 (discussing under-adjustment bias); see also STOUT, *supra* note 14, at 674 n.308 (suggesting that eliminating

Commentators have presented theoretical arguments and empirical evidence for the proposition that stock markets suffer from excess volatility.²²¹ In particular, excess market volatility may result from overreaction to information, from speculative panic sales, or from liquidity crunches.²²² Although this contention is not uncontroversial,²²³ the possibility that markets are excessively volatile cannot be dismissed out of hand.²²⁴ Thus, lessening excess volatility, and thereby reducing the social costs of undiversifiable risk, is a potentially important goal of securities regulation.²²⁵

Several legal rules intended to reduce such volatility have been enacted or proposed. For example, trading is temporarily halted upon certain major drops in stock prices.²²⁶ And it has been suggested that investors be required to pre-announce their trading orders at times of extraordinary volatility.²²⁷ Trading halts and pre-notifications may give potential buyers time to obtain sufficient cash to purchase stocks. These circuit breaker rules may lessen excess market volatility caused by panic sales and liquidity crunches (even though they would not curtail excess volatility grounded in general tendencies to overreact). To the extent that such rules are effective in reducing excess volatility, they lower risk and the associated social costs.

C. *Insider Trading and Risk*

Permitting insider trading is not likely to affect excess market volatility in any significant way. Although insider trading may lead to the incorporation of undisclosed "insider" information into stock prices, the subject information would have to relate to systematic risk to have an impact on market volatility. In other words, the inside information

stock index future trading may slow process by which new information is incorporated in the stock price and thus decrease volatility).

221. See *supra* notes 80-86 and accompanying text.

222. See *supra* text accompanying notes 82-86. Investors could avoid the risk of crashes by eliminating the need to sell their stock during such a crash, by using less margin credit for instance. Such responses, however, involve other costs.

223. See, e.g., Fama & French, *supra* note 80, at 247-48 (providing explanation of empirical data consistent with rational markets); Merton, *supra* note 80, at 108-16 (discussing econometric flaws in studies finding excess volatility).

224. But see Stout, *supra* note 14, at 672 (stating without further analysis that there seems to be no reason why the risk of selling at inaccurate prices is undiversifiable).

225. To be sure, only shareholders who sell stocks at inaccurate prices are affected by excess volatility. Cf. Stout, *supra* note 14, at 672 (explaining that, as a general principle, the only shareholders whose returns are affected by stock prices are those who actually sell their stock). Most investors, however, want to sell their stock at some point and thus value the ability to do so without incurring the risk created by excess market volatility.

226. See *supra* note 33 and accompanying text.

227. See Grundfest, *supra* note 60, at 77-78.

would have to affect many companies similarly.²²⁸ However, the material non-public information available to an insider tends to be related to the insider's company, rather than to the economy in general. For instance, a CEO may know that her company has discovered a gold mine, but she would be quite unlikely to have insider knowledge of future changes in interest or inflation rates.²²⁹ The inaccuracies that would be eliminated by permitting insider trading would thus tend to be unsystematic, and the elimination of such inaccuracies would not affect undiversifiable risk.²³⁰

VI. STOCK PRICE ORIENTED MANAGEMENT

In addition to the problems already discussed, inaccurate stock prices may result in socially undesirable "stock price oriented behavior" by management. By stock price oriented behavior, I mean actions by managers designed to maximize their company's stock price. Such actions are inefficient from the perspective of society if they result in a decline in the company's fundamental value.

In Section A of this Part, I explain why managers may engage in stock price oriented behavior and why such behavior can be inefficient if stock prices are inaccurate. Section B examines the kinds of inaccuracies that are most likely to generate inefficient stock price oriented management. Section C explores the relationship between stock price oriented management and insider trading.

A. *Causes and Effects of Stock Price Oriented Management*

Managers are concerned about the stock price of their companies for a number of reasons. For one, the compensation a manager receives may

228. Furthermore, such information would have to be negatively related to the other factors that cause stock prices to move. Therefore, the inside information must tend to be good when aggregate stock prices decrease, and bad when they increase. Otherwise, non-incorporation of the information would result in insufficient (not excess) market volatility. Cf. Stout, *supra* note 14, at 673 (arguing that incorporation of new information may actually increase market volatility).

229. Governmental insiders, such as officials at the Federal Reserve Board, may regularly have access to non-public economy-wide information. Even with respect to these insiders, however, insider trading is unlikely to reduce stock market volatility because the pertinent non-public information is generally made public within short time periods and because earlier disclosure of such information would tend to increase, rather than decrease, stock market volatility.

230. But see Thomas L. Hazen, *Rumor Control and Disclosure of Merger Negotiations or Other Control-Related Transactions: Full Disclosure or "No Comment"—The Only Safe Harbors*, 46 MD. L. REV. 954, 972-73 (1987) (arguing that non-disclosure of merger negotiations increases stock volatility). It is unclear whether authors such as Hazen believe that these activities create non-diversifiable risk or whether they regard even diversifiable risk as creating significant social costs.

be tied to the stock price, either because she owns stock²³¹ or stock options²³² in her company or because she expects to be rewarded with a larger salary raise if the company's stock price increases.²³³ Further, a low stock price may make it more likely that the manager will be fired by the company's board of directors,²³⁴ that her company will be taken over,²³⁵ or that a challenger will institute a proxy contest.²³⁶ Finally, a manager may favor a higher stock price for the sake of her shareholders, perhaps because a higher price will improve the terms of a share-for-share merger²³⁷ or acquisition,²³⁸ or because a high price is perceived to be generally in the interest of shareholders (at least of those who sell at the high price).

Such considerations may induce managers to take actions designed to increase the stock price of their companies.²³⁹ However, from the perspective of society, higher stock prices are not *per se* desirable. Rather,

231. See Harold Demsetz, *The Structure of Ownership and the Theory of the Firm*, 26 J.L. & ECON. 375 (1983) (providing overview of stock holdings by management); Randall Morck et al., *Management Ownership and Market Valuation*, 20 J. FIN. ECON. 293 (1988) (studying the relationship between management ownership and profitability).

232. See HARLAND FOX, *TOP EXECUTIVE COMPENSATION: 1983 EDITION* (1983) (finding that 27% of manufacturing companies have restricted stock plans, 80% have stock option plans); Michael C. Jensen & Jerold L. Zimmerman, *Management Compensation and the Managerial Labor Market*, 7 J. ACCT. & ECON. 3 (1985) (discussing extent of stock option ownership by executives).

233. See Anne T. Coughlan & Ronald M. Schmidt, *Executive Compensation, Management Turnover, and Firm Performance: An Empirical Investigation*, 7 J. ACCT. & ECON. 43 (1985) (reporting empirical analysis showing that managerial compensation is tied to stock prices); Jensen & Zimmerman, *supra* note 232, at 8 (stating that executive compensation is positively related to stock price performance).

234. See Coughlan & Schmidt, *supra* note 233, at 61; Michael S. Weisbach, *Outside Directors and CEO Turnover*, 20 J. FIN. ECON. 431, 435 (1988).

235. See, e.g., Kraakman, *supra* note 89, at 908-14; Henry G. Manne, *Mergers and the Market for Corporate Control*, 73 J. POL. ECON. 110, 112-13 (1965); Randall Morck et al., *Characteristics of Targets of Hostile and Friendly Takeovers*, in *CORPORATE TAKEOVERS: CAUSES AND CONSEQUENCES* 101, 117 (Alan J. Auerbach ed., 1988); David Scharfstein, *The Disciplinary Role of Takeovers*, 55 REV. ECON. STUD. 185, 186 (1988).

236. See Lucian A. Bebchuk & Marcel Kahan, *A Framework for Analyzing Legal Policy Towards Proxy Contests*, 78 CAL. L. REV. 1071, 1091-93 (1990).

237. See, e.g., Agreement and Plan of Merger by and Among the Kansas Power and Light Company, KCA Corporation, and Kansas Gas and Electric Company § 2.2(e)(1) (Oct. 28, 1990) (stating that amount of shares received by shareholders depends on shares prices prior to effective time of merger).

238. See Stein, *supra* note 78, at 63.

239. See generally Jensen & Zimmerman, *supra* note 232, at 3 (discussing relationship of executive compensation to the alignment of manager and shareholder interests). Some commentators have argued that concern about stock prices induces managers to take actions designed to avoid undervaluation (rather than to maximize the stock price) because the costs to managers from undervaluation exceed the benefits from overvaluation. See, e.g., Andrei Shleifer & Robert W. Vishny, *The New Theory of the Firm: Equilibrium Short Horizons of Investors and Firms*, AM. ECON. REV., May 1990, at 148, 151-52.

social welfare is enhanced only if the fundamental value of a stock increases. Social wealth does not increase merely because the price of a company's shares (but not its fundamental value) rises by, say, \$100 million, just as social wealth would not increase if the government were to print and distribute \$100 million in cash.²⁴⁰

If stock prices were always accurate, a manager could boost her stock price only by actions that increase the fundamental value of her company. Thus, all stock price-oriented managerial behavior would tend to be desirable.²⁴¹ The existence of inaccuracies, however, may permit a manager to take actions that increase the stock price even though they are likely to lower the company's fundamental value. This type of stock price oriented behavior would be inefficient.

The existence of inaccuracies may lead managers to take two general kinds of action aimed at stock prices, rather than at fundamental value. First, managers may "adapt" to the market's misvaluation by pursuing business strategies that result in overvaluation and avoiding those that cause undervaluation.²⁴² Assume, for example, that stock markets undervalue oil companies and overvalue transportation companies. Managers of XYZ Corp., trying to maximize its stock price and pondering how to invest \$50 million, may decide to expand the transportation subsidiary rather than the oil subsidiary even though investing in the oil subsidiary would lead to a greater increase in XYZ's fundamental value. Similarly, they may try to increase XYZ's stock price by selling the undervalued oil subsidiary at a price that exceeds the market's (mistaken) estimate of its value.²⁴³

Second, a manager may attempt to correct the market's misvaluation by sending "signals."²⁴⁴ Signaling involves actions taken by managers that credibly communicate to investors that the company is

240. The increase in perceived wealth associated with artificially high or low stock prices may, however, influence consumption behavior. See *infra* notes 260-62 and accompanying text.

241. In the presence of externalities, however, some actions that increase the fundamental stock value may be undesirable. See Andrei Shleifer & Lawrence H. Summers, *Breach of Trust in Hostile Takeovers*, in *CORPORATE TAKEOVERS: CAUSES AND CONSEQUENCES*, *supra* note 235, at 33, 41-42 (discussing increases in equity values resulting from wealth transfers from employees).

242. See Shleifer & Vishny, *supra* note 239 (fear of undervaluation induces managers to invest in projects that are unlikely to be misvalued); cf. Lipton, *supra* note 76, at 20-25 (myopia by investors leads to short-term focus by management); see also *Kamin v. American Express Co.*, 383 N.Y.S.2d 807 (N.Y. Sup. Ct. 1976) (upholding in-kind dividend argued by management to be in best interest of company despite adverse tax consequences because alternative would reduce net income figures in financial statement and thereby depress the stock price).

243. See Kraakman, *supra* note 89, at 914-20 (discussing managers' response to undervaluations by break-ups and sales of assets). The fact that oil companies are undervalued in the stock market does not necessarily imply that oil companies are undervalued in the market for oil companies.

244. See generally Michael Spence, *Job Market Signaling*, 87 Q.J. ECON. 355 (1973) (describing signaling and its effects).

undervalued.²⁴⁵ Assume that managers have positive non-public information about XYZ Corp.'s future profits. They may "signal" this information by announcing an increase in dividends.²⁴⁶ Investors, who know that managers are reluctant to cut dividends, will infer from the dividend increase that managers believe that future profits will be sufficiently high to make the increased dividend payments. Accordingly, they will adjust their assessment of XYZ Corp.'s value.

Both adaptation and signaling can result in social losses. The costs of adaptation are more evident.²⁴⁷ Pursuing business plans favored by the market even if they are not profitable, and shedding plans disfavored by the market even if they are profitable, is obviously undesirable.²⁴⁸ But signaling, as well, can be socially undesirable.²⁴⁹ At a minimum, signaling generally involves transaction costs—the cost of managerial time and the fees paid to lawyers and investment bankers to determine what signal to send and to decide when and how to send it. Moreover, the substantive action involved in giving the signal may be inefficient.²⁵⁰ For example, if managers increase dividends to correct underpricing, social losses may result from the failure of the company to invest in profitable projects (because the higher dividend rate depleted its supply of funds) or from an increased likelihood of bankruptcy (if the higher earnings expected by management fail to materialize).

245. To be credible, the signaling must be of such a nature that it would be more costly to send false signals than correct ones. This helps assure investors that false signals are not being sent. For example, a debt-equity swap may be a credible signal of high future earnings because, in the absence of such earnings, the company may be forced into bankruptcy. See generally Stephen A. Ross, *The Determination of Financial Structure: The Incentive-Signalling Approach*, 8 BELL J. ECON. 23 (1977) (developing incentive-signaling model that provides a theory capable of determining the financial structure of a firm).

246. For a discussion of the function of dividends as signals, see COPELAND & WESTON, *supra* note 11, at 584-88. Other signaling strategies include changes in the capital structure, *see id.* at 501-07; exchange offers, *see id.* at 519-20; stock dividends and stock splits, *see* Maureen McNichols & Ajay Dravid, *Stock Dividends, Stock Splits, and Signaling*, 45 J. FIN. 857 (1990); and the institution of stock option or bonus plans, *see* Jensen & Zimmerman, *supra* note 232, at 5-6.

247. In addition to differences in the obviousness of their harmfulness, adaptation and signaling also differ in that signaling is designed to remove the inaccuracy, whereas adaptation may increase inaccuracies (e.g., by having the company take on traits that result in overvaluation). Thus, managerial responses to inaccuracies do not necessarily make stock prices more accurate.

248. *See* Bebchuk & Kahan, *supra* note 236, at 1100-06 (noting that threat of proxy contests may induce undesirable adaptation); Lipton & Rosenblum, *supra* note 77 (arguing that shareholder myopia may induce undesirable adaptation).

249. *See* Philippe Aghion & Benjamin Hermalin, *Legal Restrictions on Private Contracts Can Enhance Efficiency*, 6 J.L. ECON. & ORGANIZATION 381, 403 (1990) (stating that signaling may lead to adoption of inefficient contract terms); Spence, *supra* note 244, at 368 (claiming that signaling by employees in labor markets may result in economic loss).

250. *See* Stein, *supra* note 78, at 64-65 (giving example of costly signaling).

B. *Kinds of Inaccuracies and Stock Price Oriented Management*

Not all inaccuracies will foster inefficient stock price oriented actions. Rather, to induce such actions, two conditions must be satisfied. First, the inaccuracy must be responsive to stock price oriented actions. Second, such actions must have an effect on stock prices that achieves the relevant managerial objective.

The mere fact that stock prices are inaccurate does not mean that managers can either adapt to the inaccuracy or remove it by signaling. Consider, for example, stock prices that are undervalued because of speculative trading, i.e., because investors believe that other investors will continue to pay an inadequate price for the stock. To influence speculative inaccuracies, a manager would have to be able to manipulate investors' perceptions of the amount other investors will be willing to pay. Conventional adaptation strategies and signaling devices, which are designed to affect investors' perceptions of the company's fundamental value, may not accomplish this result.²⁵¹ Similarly, managers may have little influence over the supply and demand for liquidity, and therefore may not be able to affect inaccuracies caused by liquidity crunches.

On the other hand, managers would often be in a position to affect inaccuracies caused by non-public information or by misassessment of information. To the extent that managers are aware that, for example, the stock market has a short-term focus, that transportation companies are overvalued, or that research breakthroughs are not reflected in a company's stock price, they could adapt to these inaccuracies by investing in short-term projects, by entering into the transportation industry, and by not engaging in research and development activities, respectively. Furthermore, managers may be able to reduce such mispricings by signaling. For example, they could directly disclose non-public information not reflected in the stock price²⁵² or signal the likely development of a new drug by announcing that their company has started to build a new factory in which the drug will be produced.

The second condition that must be satisfied to induce adaptation or signaling is that these devices must let managers achieve their relevant objective. As discussed earlier, managers may be interested in increasing stock prices of their companies, even at the price of a lower fundamental value, in order to raise their compensation, enhance their job security, or

251. Managers may also not know whether and how speculative mispricing relates to any particular feature of the company, thus making adaptation difficult. Signaling would tend to be effective only if investors believe that other investors will react to the signal.

252. Given the anti-fraud provisions, direct disclosure of information implies a claim by the company that the disclosed information is accurate, and thus is analogous to a signal for the accuracy of the disclosed information.

increase the welfare of their shareholders.²⁵³ To achieve such objectives, adaptation or signaling must first boost (rather than lower) the stock price,²⁵⁴ and, second, keep the stock price at the elevated level for a sufficient time span. How long stock prices must remain high depends, of course, on the specific factors that motivate the manager to seek higher stock prices.

Assume, for example, that *A* is a fifty-year-old CEO of XYZ Corp. and plans to stay with the company until retirement. To increase the value of her stock options and avoid a hostile takeover, *A* is interested in maintaining high stock prices over the next fifteen years. Even if the stock market has a short-term focus and undervalues projects that take, say, five years until they result in substantial profits, *A* may decide to invest in such projects. Even though stock prices will be lower over the next few years if such investments are undertaken, the value of XYZ Corp. after five years, and thus the value of *A*'s stock options and her job security over a fifteen-year horizon, would be greater. However, *A* may well decide not to undertake investments with payoffs in, say, fifty years. By the time the stock price would reflect these investments, *A* will have retired and sold her stock of XYZ Corp.

Thus, the extent to which an inaccuracy results in socially undesirable stock price oriented management depends on the *managerial* focus. Managers who take a longer view will tend to engage less in such inefficient behavior than managers who are concerned only about keeping the stock price high in the short-term.²⁵⁵

C. *Insider Trading and Stock Price Oriented Management*

Removing the insider trading prohibition may alleviate some of the social costs of stock price oriented behavior. Permitting insider trading would give managers an additional signaling method: They could communicate their assessment that their companies' stock is underpriced by purchasing it.²⁵⁶ Therefore, unlike most other signaling devices, insider trading creates an incentive to signal overvaluations by selling stock. This would tend to reduce overpricing, and lessen incentives to take inefficient actions that (absent insider trading) would result in overpricing. The extent of these benefits would depend on the social costs that result

253. See *supra* notes 231-40 and accompanying text.

254. For this reason, managers of overvalued companies will tend not to engage in signaling.

255. See Lipton & Rosenblum, *supra* note 77, at 210-14, 216. The authors suggest the use of quinquennial elections of directors to induce managers to take a longer-term perspective. See *id.* at 224-52.

256. Permitting insider trading, however, may make other signaling devices less effective because it creates profit opportunities from sending incorrect signals (e.g., by buying stock before signaling, and selling it thereafter). See *supra* notes 244-46.

from the signaling and adaptation devices that managers use in its stead.²⁵⁷

VII. OTHER EFFECTS OF STOCK PRICES

In addition to capital allocation, liquidity, risk, and stock price oriented management, stock prices can have a number of other secondary effects on the economy. A full analysis of all the ways in which stock prices may affect social wealth would be beyond the scope of this Article. Therefore, I limit this Part to a brief discussion of four further reasons why stock prices matter.²⁵⁸

A. *Social Losses Related to Macroeconomic Shocks*

Major economic shocks, such as substantial increases in the price of oil or in the exchange rate, can have adverse effects on the rate of growth and the rate of unemployment.²⁵⁹ Until the overall economy adjusts, say, to a doubling of the oil price, employees in oil consuming industries may be laid off and the rate of economic growth may decline.

Sudden changes in stock prices may have similar effects. The market value of stocks is one factor that determines the wealth that consumers perceive themselves to have. The amount of perceived wealth that consumers in the aggregate possess, in turn, influences the aggregate amount of consumer spending.²⁶⁰ Consequently, major unexpected declines in stock prices may reduce the aggregate level of consumer spending.²⁶¹ A sudden reduction in spending, in turn, may lower the rate of

257. This analysis is not meant to imply that insider trading does not itself involve social costs. Indeed, like other signaling methods, insider trading produces transaction costs and may be costly in itself. (Just like increasing dividends, stock repurchases by the company may cause the company not to invest in all profitable projects.) In addition, insider trading may result in collateral costs. See *supra* note 44. Whether insider trading on the whole is beneficial depends on its relative costs and benefits. Averting the costs of adaptation and other signaling devices is one of the benefits of insider trading.

258. Other secondary effects of stock prices not discussed in the article include effects on the amount of taxes payable in an exchange offer, see I.R.C. § 1275 (1988); effects on monetary policy pursued by the Federal Reserve Board, see FREDERICK M. O'HARA, JR. & ROBERT SICIGNANO, HANDBOOK OF UNITED STATES ECONOMIC AND FINANCIAL INDICATORS 96 (1985); effects on the amounts awarded under appraisal rights statutes, see ROBERT C. CLARK, CORPORATE LAW 452-55 (1986); and effects on corporate board decisions to dismiss the CEO, see Coughlan & Schmidt, *supra* note 233, at 60-65. Societal losses may result from inadvisable monetary policies, erroneous appraisal rights awards and tax liability assessments, and mistaken executive dismissals.

259. See, e.g., OLIVIER J. BLANCHARD & STANLEY FISCHER, LECTURES ON MACROECONOMICS 9-15 (1989).

260. See generally Franco Modigliani, *Fluctuations in the Saving-Income Ratio: A Problem in Economic Forecasting*, in 2 THE COLLECTED PAPERS OF FRANCO MODIGLIANI 3 (Andrew Abel ed., 1980).

261. BRADY REPORT, *supra* note 39, at VII-1. For studies on the wealth effect of stock price changes on consumption spending, see John J. Arena, *Postwar Stock Market Changes and Consumer*

economic growth and could, in conjunction with other factors, cause the economy to fall into a recession.²⁶²

Stock price inaccuracies are thus undesirable if they cause major unexpected declines in stock prices. Consider, for example, the October 1987 crash. Between October 13, 1987, and October 19, 1987, stock prices declined by almost one-third, wiping out \$1 trillion in perceived wealth.²⁶³ Whether stock prices were too high before October 13 or too low after October 19, this sudden reduction in wealth greatly increased concerns over the likelihood of a recession and could have easily caused one.²⁶⁴ Even though no recession ensued in the wake of the 1987 crash,²⁶⁵ it probably had a depressing effect on economic activity.²⁶⁶ Thus, inaccuracies that increase the likelihood of major crashes, and therefore raise the possibility of recessions, are undesirable.

B. *Social Losses Related to Changes in Control*

Who exercises control over the management of a company is of great importance to investors as well as society. The value of a company depends significantly on who manages it.²⁶⁷ It is therefore generally desirable to have managers who will deploy the company's assets in the most profitable way. In particular, it is desirable to have a change in the

Spending, 47 REV. ECON. & STAT. 379, 388 (1965) (finding predicted but not always statistically significant effects); Barry Bosworth, *The Stock Market and the Economy*, 2 BROOKINGS PAPERS ON ECON. ACTIVITY 257, 258-80 (1975) (same); N. Gregory Mankiw & Stephen P. Zeldes, *The Consumption of Stockholders and Nonstockholders*, 29 J. FIN. ECON. 97, 106-08 (1991) (finding that stockholder spending is positively correlated with stock prices).

262. Similarly, stock prices that rise too high and cause aggregate spending to rise might create inflationary pressures.

263. BRADY REPORT, *supra* note 39, at v. On October 20, stock prices recovered about 13% of their previous value. *Id.* at 1, 42.

264. *See id.* at VII-1 to VII-4; *see also* Greenwald & Stein, *supra* note 39, at 5-8 (noting that crashes sometimes lead to recessions).

265. The reaction by the Federal Reserve Board and Congress may have helped to avert a recession. *See* BRADY REPORT, *supra* note 39, at VII-3 to -4.

266. *Id.* at VII-3 (concluding that stock price decline "almost sure to have some depressing effect," though magnitude of effect difficult to quantify). Indeed, a depression did ensue after, and may have been caused at least in part by, the crash of 1929. *See* White, *supra* note 59 (arguing that the 1929 crash was the burst of a speculative bubble and may have propelled the Great Depression).

267. *See, e.g.,* Michael Bradley et al., *The Rationale Behind Interfirm Tender Offers: Information or Synergy?*, 11 J. FIN. ECON. 183, 205 (1983) (stating that takeovers produce positive synergies); Harry DeAngelo et al., *Going Private: Minority Freezeouts and Stockholder Wealth*, 27 J.L. & ECON. 367, 391-401 (1984) (claiming that going private proposals, which can be accomplished through leveraged buyouts, produce gains to minority shareholders); Frank H. Easterbrook & Daniel R. Fischel, *Corporate Control Transactions*, 91 YALE L.J. 698, 705-08 (1982) (arguing that gains from third-party acquisition may stem from better management).

control of a company²⁶⁸ whenever such change increases the fundamental value of the company (after taking into account the transaction costs involved in changing control).²⁶⁹ Control changes that do not raise the fundamental value of the company are undesirable.

One principal way to take control of a company is to acquire it. This may be accomplished by means of a hostile takeover, a friendly third-party acquisition, or a management buyout. Inaccurate stock prices may induce undesirable, and deter desirable, acquisitions. A stock price below fundamental value may lead a raider to commence a hostile takeover, or management may propose a management buyout,²⁷⁰ even if the transaction does not increase the fundamental value of the company.²⁷¹ A stock price above fundamental value, on the other hand, may discourage acquisitions that would increase a company's value.²⁷²

To be sure, even if stock prices are accurate,²⁷³ an acquirer generally has to pay a premium over the no-acquisition share price (the price at which the company stock would trade absent the prospect of acquisition) in order to acquire a company.²⁷⁴ However, even though the acquisition

268. For the sake of simplicity, I assume that control changes do not generate negative externalities. *But see, e.g.,* Bebchuk & Kahan, *supra* note 236, at 1077 (arguing that control changes may adversely effect private control benefits derived by incumbents); Louis Lowenstein, *Management Buyouts*, 85 COLUM. L. REV. 730, 759-64 (1985) (claiming that control changes may have adverse effects on tax revenues); Shleifer & Summers, *supra* note 241, at 47-53 (stating that control changes may have adverse consequences for employees). If such negative externalities are present, they must also be accounted for in determining the desirability of a change in corporate control.

269. Control changes often involve significant transaction costs. *See, e.g.,* Bebchuk & Kahan, *supra* note 236, at 1081 (noting that proxy contests can involve substantial campaign expenditures); Lowenstein, *supra* note 268, at 743 (reporting that Malone & Hyde management buyout involved \$16.5 million in fees and expenses).

270. Taking control over the company may be preferable to merely investing in undervalued companies because an acquirer can take actions, such as signaling or bust-ups, that remove the undervaluation. *See* Kraakman, *supra* note 89, at 939-40; *supra* text accompanying notes 244-46.

271. *See* Lucian A. Bebchuk, *The Sole Owner Standard for Takeover Policy*, 17 J. LEGAL STUD. 197, 205-07 (1988) (arguing that takeover bids may be motivated by non-public information); Victor Brudney & Marvin A. Chirelstein, *A Restatement of Corporate Freezeouts*, 87 YALE L.J. 1354, 1365-70 (1978) (claiming that management buyouts can be motivated by undervaluation); Kraakman, *supra* note 89, at 908-14 (claiming that "discounts" encourage acquisitions); Richard Roll, *Empirical Evidence on Takeover Activity and Shareholder Wealth*, in MODERN FINANCE AND INDUSTRIAL ECONOMICS 74, 79-81 (Thomas E. Copeland ed., 1987) (asserting that mergers and takeovers may be motivated by acquirer's knowledge that the target firm is undervalued).

272. *See* Fox, *supra* note 143, at 1020-21.

273. If an acquirer tries to take control by purchasing shares, accurate stock prices would reflect value increases of minority shares after an acquirer has obtained control over the majority of shares. Sanford J. Grossman & Oliver D. Hart, *Takeover Bids, the Free-Rider Problem, and the Theory of the Corporation*, 11 BELL J. ECON. 42 (1980).

274. *See* COPELAND & WESTON, *supra* note 11, at 717-30 (presenting overview of studies generally showing that target shareholders earn significant premiums in mergers and tender offers); DeAngelo, *supra* note 267, at 401 (reporting that average management buyout premium is 56%). Sharing gains created by an acquisition through premiums may be desirable to the extent that the

price generally exceeds the no-acquisition share price, an inaccurate share price may easily have a distortive effect. If the no-acquisition share price is too high (e.g., if it is twice the no-acquisition fundamental value), an acquirer may not be able to afford the premium necessary to obtain control even if the acquisition increases the company's fundamental value by, say, fifty percent. Thus, overvaluations tend to discourage desirable takeovers. Conversely, even if an acquirer has to pay a premium, a no-acquisition share price that is substantially below the company's fundamental value may induce undesirable control changes.

Not all stock price inaccuracies, however, are likely to distort significantly the market for corporate control. In particular, inaccuracies that last only for a short term—e.g., inaccuracies caused by liquidity crunches and random short-run inaccuracies—may neither inspire undesirable control changes nor deter desirable ones.²⁷⁵ By the time an acquirer takes steps to purchase a company suffering from short-term undervaluation, the undervaluation will have vanished. And although a short-term overvaluation may delay an efficient acquisition, it is unlikely to prevent one.

On the other hand, more permanent misvaluations, such as systematic discounts²⁷⁶ or long-lasting inaccuracies caused by non-public information,²⁷⁷ may have an adverse effect on control changes. Undervaluations that persist until the acquisition is completed afford the acquirer with the opportunity to effect the purchase at a low price. And long-lasting overvaluations could inhibit desirable acquisitions for prolonged time periods. Therefore, it may be desirable to require companies implicated in potential control changes to disclose information that would expose misvaluations.²⁷⁸

acquired firm helps produce these gains, by having made initial investments that have a greater value when combined with the acquirer's assets or by having searched for the acquirer. *See* Bebchuk, *supra* note 271, at 210-13.

275. In addition, if the same factor that is responsible for the market misvaluation is also responsible for an equivalent misvaluation by the potential acquirer—e.g., the company is mispriced on account of non-public information not known to the buyer—the inaccuracy will have no impact on whether the company will be acquired.

276. *See generally* Kraakman, *supra* note 89, at 891-932 (describing discounts and their implications for the acquisitions market).

277. *See supra* text accompanying notes 47-49.

278. Presently, securities laws impose stringent disclosure requirements on targets in going-private transactions, *see* 17 C.F.R. § 240.13e-3 (1991), and solicitations of proxies, *see id.* § 240.14a; moderate requirements on persons making tender offers, *see id.* § 240.14d; and light requirements on companies receiving tender offers, *see id.* § 240.14e-2, 14d-9. *Cf.* Coffee, *supra* note 14, at 740-43 (arguing that disclosure is especially important in leveraged buyouts); Dennis, *supra* note 13, at 1219 (arguing for expanded target disclosure in corporate control transactions).

C. *Social Losses Related to the Corporate Contract*

A number of legal rules govern the relationship between shareholders and managers. Such rules concern, for example, the operation of proxy contexts,²⁷⁹ the duties of management in a takeover,²⁸⁰ the right of shareholders to manage the company,²⁸¹ and general fiduciary duties of officers and directors.²⁸² The sources for these rules include state corporation statutes, federal securities laws, and corporate charters and bylaws. The rules applicable to the company when it initially offers shares to the public (i.e., the rules of the initial state of incorporation coupled with the initial charter and bylaws) may be referred to as the corporate contract between shareholders and managers. Absent externalities,²⁸³ it is desirable that the corporate contract include those rules that maximize the fundamental value of shares and the personal benefits that accrue to managers.²⁸⁴

If the stock market values corporate contract terms accurately, an entrepreneur who takes the company public will have an incentive to design efficient corporate contracts.²⁸⁵ Assume, for example, that entrepreneur *E* plans to go public with XYZ Corp., a closely held company solely owned by *E*. Assume further that eliminating *E*'s personal liability for violations of the duty of care as a future director²⁸⁶ increases her

279. See Bebchuk & Kahan, *supra* note 236, at 1082.

280. See, e.g., *Revlon, Inc. v. MacAndrews & Forbes Holdings*, 506 A.2d 173, 184 (Del. 1986) (requiring management to seek maximum price when selling company); *Unocal Corp. v. Mesa Petroleum Co.*, 493 A.2d 946, 955 (Del. 1985) (permitting managers to take defensive measures in response to a hostile takeover if they are "reasonable in relation to the threat posed").

281. See DEL. CODE ANN. tit. 8 [DEL. GEN. CORP. L.], § 141(a) (1991) (stating that directors of a corporation exercise general management powers).

282. See, e.g., *Smith v. Van Gorkom*, 488 A.2d 858, 873 (Del. 1985) (holding that management owes duty of care); DEL. CODE ANN. tit. 8 [DEL. GEN. CORP. L.], § 102(b)(7) (1991) (permitting companies to limit personal liability of directors for breaches of certain duties).

283. Externalities, in this context, refer to the effects of charter terms on parties other than the shareholders and managers arranging the initial corporate contract. Some commentators claim that the corporate contract involves a number of externalities. See, e.g., Bebchuk & Kahan, *supra* note 236, at 1130-32 (noting externalities on proxy contest challengers); Frank H. Easterbrook & Daniel R. Fischel, *The Corporate Contract*, 89 COLUM. L. REV. 1416, 1437 (1989) (discussing externalities on hostile raiders); Jeffrey N. Gordon, *The Mandatory Structure of Corporate Law*, 89 COLUM. L. REV. 1549, 1567-74 (1989) (noting externalities related to public goods and innovation).

284. Absent externalities, these are the rules that will maximize social wealth. See Bebchuk & Kahan, *supra* note 236, at 1130. In the presence of externalities, of course, the rules that maximize social wealth will be those that maximize the wealth of all parties affected by the corporate contract.

285. See, e.g., Lucian A. Bebchuk, *Limiting Contractual Freedom in Corporate Law: The Desirable Constraints On Charter Amendments*, 102 HARV. L. REV. 1820, 1826 (1989); Easterbrook & Fischel, *supra* note 283, at 1420-21; Gordon, *supra* note 283, at 1557. As discussed, even if corporate contract terms are valued accurately, externalities may cause them to be inefficient. See *supra* notes 283-84 and accompanying text.

286. Several states permit companies to limit the personal liability of directors for violations of the duty of care. See, e.g., DEL. CODE ANN. tit. 8 [DEL. GEN. CORP. L.], § 102(b)(7) (1991).

personal benefits by \$2 million, but decreases the fundamental value of XYZ Corp. by \$5 million. Despite the personal benefits to *E*, she would not include a provision limiting her liability in the charter of XYZ Corp.: As a result of that provision, the per share amount received in the public offering would decline, and the value of the shares *E* retains would fall by more than \$2 million.²⁸⁷

Inaccuracies in the valuation of corporate contract terms may, however, lead an entrepreneur to design inefficient corporate contracts.²⁸⁸ Assume, for example, that the price at which *E* can have XYZ Corp. issue shares is not affected by whether her personal liability is limited. In that case, *E* may include such a limitation in the charter even if the limitation is socially undesirable.²⁸⁹

Whether stock prices provide incentives to design efficient corporate contracts will *not* depend on whether stock prices in general are accurate. Rather, it will depend on whether stock prices *at initial public offerings* accurately reflect the impact of *the provisions in the initial corporate contract* on the stock price.²⁹⁰ Thus, even if the market's assessment of the value of XYZ's shares is off by, say, \$20 million, *E* would have an incentive not to limit her personal liability as long as the relative value of XYZ with the limitation is \$5 million lower than without it.

D. Social Losses Related to Capital Budgeting

Stock prices can also influence the calculation of discount rates used in capital budgeting decisions. In deciding whether to invest in a project, companies generally estimate the project's future cash flows and discount

287. Assume, for example, that \$80 million must be raised in the public offering, that absent the limitation the value of XYZ Corp. is \$100 million, and that with the limitation the value of XYZ Corp. is \$95 million. Absent the limitation, *E* will have to sell 80% of XYZ Corp.'s shares to raise \$80 million and will retain 20% worth \$20 million. With the limitation, she would have to sell about 84%; her remaining 16% would be worth only \$15 million.

288. See Lucian A. Bebchuk, *Freedom of Contract and the Corporation: An Essay on the Mandatory Role of Corporate Law*, Harvard Program in Law and Economics, Discussion Paper No. 46, (unpublished 1988); Victor Brudney, *Corporate Governance, Agency Costs, and the Rhetoric of Contract*, 85 COLUM. L. REV. 1403, 1411-27 (1985); Robert C. Clark, *Contracts, Elites, and Traditions in the Making of Corporate Law*, 89 COLUM. L. REV. 1703, 1718-19 (1989); John C. Coffee, Jr., *The Mandatory/Enabling Balance in Corporate Law: An Essay on the Judicial Role*, 89 COLUM. L. REV. 1618, 1677-78 (1989); Melvin A. Eisenberg, *The Structure of Corporation Law*, 89 COLUM. L. REV. 1461, 1516-18 (1989).

289. In the example *supra* in note 287, with the limitation, *E* would retain 20% of the shares of XYZ Corp. worth \$19 million. Thus, given the \$2 million in personal benefits from the limitation, she would prefer to include the limitation in the charter.

290. See Easterbrook & Fischel, *supra* note 283, at 1430-32; Gordon, *supra* note 283, at 1559-62. When stock is sold through firm commitment underwriting, see *supra* text accompanying note 151, it will be important whether the price paid to the company by the underwriter reflects the provisions of the corporate contract.

these future cash flows to determine their present value.²⁹¹ Companies invest in a project if the discounted value of the cash inflows exceeds the discounted value of the required cash outlays, i.e., when the project has a positive net present value.²⁹²

A commonly used method to determine the proper discount rate is based on the capital asset pricing model. This model asserts that the rate at which cash flows ought to be discounted depends on the risk-free interest rate and the degree of undiversifiable risk associated with the investment project.²⁹³ The level of undiversifiable risk is denominated β . The β of an investment project is (theoretically) determined by the degree to which changes in the value of the investment project correspond to movements in the stock market index. A greater level of undiversifiable risk results in higher β s, and thus higher discount rates.²⁹⁴

Changes in the value of future investment projects are, of course, not observable, and thus cannot be directly measured. However, one can approximate the β of a project by calculating the historical β of companies that have previously invested in similar projects.²⁹⁵ Thus, for instance, the β of the project "Constructing a Factory Producing Computer-Controlled Machine Tools" would be measured by the average historical β of firms in the machine tool industry.

The historical β of companies is measured in a two-step process. First, the β of a company's equity is calculated by the degree to which movements in the company's stock price correspond to movements in the stock market index.²⁹⁶ This calculation is made on the basis of protracted stock price movements over long terms.²⁹⁷ For example, if the average monthly stock price of XYZ Corp. increased by two percent for every one percent increase in the average monthly market index, XYZ Corp. would have an equity β of two; if it increased by half of a percent for every one percent increase, it would have an equity β of .5.²⁹⁸ In the

291. This method, called "net present value," is regarded as the best capital budgeting technique. For an overview of other capital budgeting techniques and their drawbacks, see BREALEY & MYERS, *supra* note 142, at 71-88.

292. *See id.* at 93-116 (detailing procedure for making investment decisions under net present value method).

293. *See id.* at 173-96 (calculating discount rates under capital asset pricing model).

294. *See id.* at 137-40 (explaining relationship between risk and return under capital asset pricing model).

295. *See id.* at 175-87.

296. Equity β is defined as the covariance between the rate of return on the stock and the rate of return on the market divided by the variance of the rate or return on the market. COPELAND & WESTON, *supra* note 11, at 198.

297. A standard period used is monthly averages of stock price movements over a five-year period. *See* BREALEY & MYERS, *supra* note 142, at 175-78. Monthly averages are regularly published in so-called "beta books." *See id.* at 178-81.

298. *See id.* at 134.

second step, one estimates the β of the company's debt,²⁹⁹ and calculates the company's asset β as the weighted average between the equity and the debt β .³⁰⁰

Inaccurate stock prices may lead to biased estimates and thus cause companies to apply incorrect discount rates to their investment projects (which, in turn, lead to inefficient capital budgeting decisions).³⁰¹ Assume, for example, that, because stock prices are inaccurate, the average β of machine tool firms is estimated to be 1.5, while their true β is 1.2. This incorrect estimate of β will cause a company to apply too high a discount rate to its machine tool investment project and thus to reject the project even if the project is profitable.

As discussed, the determination of discount rates is generally based on long-term average stock prices of several firms in the pertinent industry. Thus, an inaccuracy is likely to have a significant effect on discount rates only if it biases, in an analogous manner, stock prices for several firms in one industry for protracted periods of time.³⁰² Persistent industry-wide overvaluation or undervaluation would bias the relative weights of debt β and equity β and thereby cause errors in the calculation of the discount rate. Therefore, for example, random short-run mispricings of individual stocks³⁰³ are unlikely to have a substantial effect on discount rates; by contrast, long-term industry-wide inaccuracies may have a major effect.³⁰⁴

299. It is sometimes assumed that the debt is risk-free and the debt β is 0. See *id.* at 185 (stating that debt β s are usually near zero and that most financial analysts assume zero debt β s for large companies).

300. *Id.*

301. Inaccurate stock prices will not necessarily affect equity β s. Assume that the rate of return on stock is the sum of two components— R_f and R_i —where R_f is the fundamental return weighted by the fraction of the stock price that is attributable to fundamental value, and R_i is the return attributable to the inaccuracy weighted by the fraction of the stock price attributable to the inaccuracy. The β of that stock would equal the sum of the covariances between, respectively, R_f and R_i and the return on the market, divided by the variance of the return on the market. Thus, β could only be affected by the inaccuracy if (1) R_f is not equal to the fundamental rate of return, (2) the covariance between R_i and the market return is not zero, or (3) the inaccuracy affects the variance of the rate of return on the market. Note, however, that inaccurate stock prices can also affect asset β s if it biases the relative weights of equity β s and debt β s.

302. Inaccuracies that affect the stock price of only one firm or last only short periods of time will not generally affect discount rates.

303. See *supra* text accompanying notes 87-88.

304. Even if the inaccuracy affects the calculation of discount rates, it will not necessarily lead to inferior capital budgeting decisions. Assume, for example, that the stock of XYZ Corp., a machine tool company, is misvalued because it does not reflect the discovery of a gold mine. As a result of that inaccuracy, XYZ Corp. has the estimated historical β of a machine tool company, rather than the β of a gold mining and machine tool company. However, its estimated historical (rather than its true) β is the right one for XYZ Corp.'s calculation of the discount rate for machine tool investment projects.

E. *Insider Trading and Other Social Costs*

Insider trading is unlikely to have much effect on the social costs of inaccurate stock prices from macroeconomic shocks, inefficient corporate contracts, and inferior capital budgeting decisions discussed in this Part. First, because insider trading does not remove excess market volatility³⁰⁵ or undiversifiable risk,³⁰⁶ permitting insider trading is not likely to remove inaccuracies caused by macroeconomic shocks. Second, insider trading would not tend to reduce social losses from an inefficient design of corporate contracts because, as discussed, insider trading generally will not affect the price a company receives for its shares when it goes public.³⁰⁷ Finally, permitting insider trading is not likely to reduce significantly social losses from inferior capital budgeting decisions because insider trading would predominantly remove only firm-specific mispricings.³⁰⁸

However, a repeal of the insider trading rule could reduce social losses related to changes in control. Insider trading may help reduce the more permanent misvaluations, especially long-lasting inaccuracies caused by non-public information.³⁰⁹ Because of this, permitting insider trading might lead to a more efficient functioning of the market for corporate control, much as mandatory disclosures for companies threatened with changes in control might also improve the efficient functioning of the market.³¹⁰

VIII. CONCLUSION

Although many features of the current legal framework that governs securities regulation are defended as making stock prices more accurate, little attention has been paid to why more accurate stock prices are desirable. In this Article, I have put forward a comprehensive framework for analyzing the benefits of a wide range of securities laws directed toward enhancing stock price accuracy. The central conclusion reached in this Article is that, although enhanced accuracy is likely to engender benefits, the extent of these benefits depends to a critical degree on the exact kind of inaccuracy that is eliminated.

The framework developed in this Article has two components. First, to explore the distinct ways in which stock prices may be inaccurate, I established a taxonomy of inaccuracies. In this taxonomy, I

305. See *supra* notes 116-19 and accompanying text.

306. See *supra* notes 228-30 and accompanying text.

307. See *supra* text accompanying notes 174-80.

308. See *supra* text accompanying notes 291-304.

309. See *supra* notes 104-25 and accompanying text.

310. See *supra* text accompanying notes 267-78.

grouped and analyzed inaccuracies along three dimensions: cause, manifestation, and scope. Second, I delineated the different channels through which such inaccuracies may cause social losses.

I discussed in detail four principal reasons why inaccurate stock prices may be undesirable. For one, an inaccurate stock price at a time in which a company raises equity capital can lead to a misallocation of capital to firms. It may thus be efficient to target securities laws toward enhancing stock price accuracy of companies engaged in equity offerings.

Second, an anticipation by some investors to lose from trading stock on account of inaccuracies can result in "loss of liquidity" costs. Securities regulations may thus be designed to limit expected trading losses to investors, e.g., by mandating disclosure or limiting trading by investors with informational advantages.

Third, if aggregate stock prices are more volatile than fundamental values, society suffers increased risk-bearing costs. Regulations aimed at reducing excess market volatility, such as circuit-breaker rules, may thus be beneficial.

Fourth, inaccurate stock prices may also allow for inefficient stock price oriented behavior, which increases the stock price, but lowers the fundamental value of the company. A manager may have an incentive to engage in such behavior, for example, because her compensation increases with the stock price of her company.

In addition, I also considered four secondary ways in which inaccurate stock prices may result in social losses: Stock market crashes may contribute to recessions and unemployment; long-term mispricings may inhibit the efficient functioning of the market for corporate control; inaccurate pricing of charter terms when a firm goes public may provide incentives to entrepreneurs to devise inefficient charter provisions; and protracted industry-wide misvaluations may bias the calculation of discount rates and lead to inefficient capital budgeting decisions.

The framework developed in this Article has been used to analyze whether any benefits are created by a repeal of the insider trading prohibition, assuming *arguendo* that such a repeal would enhance stock price accuracy. Such a repeal of the insider trading prohibition would tend to reduce inaccuracies caused by non-public firm-specific information. The benefits of such an enhanced accuracy, however, are limited. Because stock prices at public offerings would not be affected, a repeal would not improve capital allocation or reduce losses related to inefficient corporate contracts. Because the inaccuracies affected by the prohibition are firm specific, a repeal would not reduce losses from risk, macroeconomic shocks, and inefficient capital budgeting decisions. Indeed, the analysis

has shown that a repeal of the insider trading prohibition may even increase "loss of liquidity" costs. On the other hand, a repeal may reduce the costs from stock price oriented managerial behavior and from a malfunctioning of the market from corporate control. On the whole, then, the line of argument that a repeal of the insider trading prohibition would enhance stock price accuracy, even if true, does not provide a strong basis for a repeal of the prohibition.

In conclusion, I stress that any specific suggestions and recommendations made in this Article are intended to be tentative, rather than conclusive. The aim of this Article is to provide a framework for identifying and resolving questions on the social benefits created by accurate stock prices and the proper design of legal regulations that affect stock price accuracy. The final answers must await a detailed empirical investigation that would be beyond the scope of this Article.