

THE RULE 10B5-1 LOOPHOLE: AN EMPIRICAL STUDY

INTRODUCTION

In 2000, the Securities and Exchange Commission (“SEC”) promulgated Rule 10b5-1,¹ which defined trading “on the basis of” inside information to mean simply trading while in possession of such information. This meant that the SEC (or any private plaintiff, for that matter) would no longer need to prove a causal link between the inside information and the trade in order to establish the existence of a violation of Rule 10b-5,² the general antifraud provision whose prohibitions extend to what is commonly referred to as “insider trading.” The new rule was not entirely one-sided in favor of the SEC, however: it also created a safe harbor for trades executed pursuant to pre-planned and (supposedly) irrevocable trades that were created *prior* to the receipt of inside information.

Through its implementation, however, Rule 10b5-1 may have become one-sided in the other direction, because the SEC has effectively eliminated the requirement that the pre-planned trades be irrevocable. Although Rule 10b5-1 requires that a set of pre-planned trades (a “10b5-1 plan”) be irrevocable in order to take advantage of the safe harbor, the SEC staff has publicly opined that *cancelling* such a trade on the basis of material nonpublic information would not fall within the ambit of Rule 10b-5 at all, since it would not be “in connection with the purchase or sale of any security” as required by Section 10(b) of the Exchange Act (under which Rule 10b-5 was

¹ 17 C.F.R. § 240.10b5-1.

² 17 C.F.R. § 240.10b-5.

promulgated). The SEC's unwillingness or inability to prevent the cancellation of planned trades appears to create a loophole that allows insiders to cancel their supposedly irrevocable trades on the basis of inside information.³ Moreover, if in fact such a loophole exists (or is believed by the market to exist), then current theory regarding insider trading predicts certain empirically verifiable effects, such as reduced market liquidity and abnormal returns in the direction signaled by insiders.

This study seeks to examine these effects. To date, two commentators have addressed this 10b5-1 loophole. The first demonstrated the existence of the loophole if 10b5-1 plans are cancellable,⁴ and the second found empirical evidence that executives make above-market returns from trades executed pursuant to 10b5-1 plans.⁵ Both commentators have focused on the effect of Rule 10b5-1 *on insiders* – whether insiders can and do make above-market returns using 10b5-1 plans. This Article, in contrast, will attempt to examine the empirical effect of 10b5-1 plans on *the market* for a security. In other words, this Article investigates whether the market thinks that Rule 10b5-1 allows insiders to make use of their inside information by examining how the pendency of a publicly announced 10b5-1 plan affects the market.⁶

³ See *infra* Part II for a discussion of the effect of Rule 10b5-1 on private suits for securities fraud, and *infra* Part VII for an analysis of whether and to what extent the SEC has the legal ability to prevent the cancellation of planned trades.

⁴ Jesse Fried, *Insider Abstention*, 113 YALE L.J. 455 (2003).

⁵ Alan D. Jagolinzer, *Do Insiders Trade Strategically within the SEC Rule 10b5-1 Safe Harbor?* 10 (Dec. 6, 2006) (working paper), available at <http://ssrn.com/abstract=541502> (last visited Feb. 11, 2007).

⁶ This Article does not allege or suggest that anyone is engaging in illegal conduct. To the contrary, the Article argues that under current law insiders are able to make perfectly legal use of material nonpublic information, and that this is a loophole that needs to be closed if legislators and regulators wish to prevent the use of material nonpublic information in the securities markets. See *infra* Part II.B.

Part I will provide background on “insider trading” as a species of securities fraud. Part II will describe Rule 10b5-1 and the loophole may have created. Part III will present the hypothesis of the paper: namely, that trading plans executed under Rule 10b5-1 have empirically verifiable effects on the securities markets consistent with information asymmetries. Part IV will discuss the data used for this study. Part V will discuss the methods by which this study seeks to test the hypothesis. Part VI will present and discuss the results. Part VII will conclude.

I. INSIDER TRADING

What is colloquially referred to as “insider trading” is actually a type of securities fraud. Section 10(b) of the Securities Exchange Act of 1934 (“Exchange Act”) makes it unlawful “[t]o use or employ, in connection with the purchase or sale of any security . . . any manipulative or deceptive device or contrivance in contravention of such rules and regulations as the Commission may prescribe as necessary or appropriate in the public interest or for the protection of investors.”⁷ Pursuant to Section 10(b), the Securities and Exchange Commission (“the Commission” or “the SEC”) has promulgated a number of rules prohibiting specific fraudulent practices,⁸ as well as Rule 10b-5, a general antifraud rule whose own broad language is cabined by Section 10(b)’s requirement of “scienter” or deceptive intent.⁹ Notwithstanding this

⁷ 15 U.S.C. § 78j(b).

⁸ See, e.g., Rule 15c2-11, 17 C.F.R. § 240.15c2-11.

⁹ See *Ernst & Ernst v. Hochfelder*, 425 U.S. 185, 212–213 (1976) (holding that the scienter requirement of Section 10(b) necessarily applies to Rule 10b-5 because “Rule 10b-5 was adopted pursuant to authority granted the Commission under § 10(b)”); *Aaron v. SEC*, 446 U.S. 680, 696–97 (1980) (holding that the scienter requirement of Section 10(b) applies to the SEC as well as private plaintiffs, and defining scienter as “a mental state embracing intent to deceive, manipulate, or defraud.”)

limitation, Section 10(b) and Rule 10b-5 have come to be used as the “catchall” antifraud provisions of the securities laws, spawning their own body of administrative, civil, and criminal law.¹⁰

The Supreme Court has applied these antifraud provisions to prohibit “insiders” of a firm from trading in the firm’s stock “on the basis of material, nonpublic information.”¹¹ In doing so, the Court has had to face the question of *who* is considered an “insider.” The Court has interpreted the concept quite broadly – to include, for example, trades by people who received “inside tips” from someone in possession of material nonpublic information (i.e., tippees), so long as the tipper breached a duty of trust or confidence in order to obtain the information in the first place.¹² In fact, someone can be guilty of “insider trading” without even receiving information from a true insider:¹³ a person violates Section 10(b) and Rule 10b-5 whenever “he

¹⁰ *Ernst & Ernst*, 425 U.S. at 203 (referring to Section 10(b) as a “catchall clause to enable the Commission to deal with new manipulative or cunning devices”) (internal quotation marks omitted); accord LOUIS LOSS & JOEL SELIGMAN, *SECURITIES REGULATION* § 9-B-3 (LEXIS 3d ed 2002) (“[I]t is difficult to think of another instance in the entire corpus juris in which the interaction of the legislative, administrative rulemaking, and judicial processes has produced so much from so little.”).

¹¹ *United States v. O’Hagan*, 521 U.S. 642, 652 (1997); accord *Chiarella v. United States*, 445 U.S. 222, 226 (1980), quoting *In re Cady, Roberts & Co.*, 40 S.E.C. 907, 911 (Commission opinion) (1961) (holding Rule 10b-5 to require “that insiders must disclose material facts which are known to them by virtue of their position but which are not known to persons with whom they deal and which, if known, would affect their investment judgment”); *Basic Inc v. Levinson*, 485 U.S. 224, 240 (1988) (“[M]ateriality depends on the significance the reasonable investor would place on the withheld or misrepresented information.”); *Selective Disclosure and Insider Trading*, Securities Act Release No. 7881, Exchange Act Release No. 43,154, Investment Company Act Release No. 24,599, 65 FED. REG. 51,716, 51,727 (Aug. 24, 2000) [hereinafter 10b5-1 Release] (“[I]nsider trading law has developed on a case-by-case basis under the antifraud provisions of the federal securities laws, primarily Section 10(b) of the Exchange Act and Rule 10b-5.”); see generally LOSS & SELIGMAN, *supra* note 10, § 9-B (discussing the origins and development of securities fraud under Section 10(b) and Rule 10b-5).

¹² See *Dirks v. SEC*, 463 U.S. 646, 662 (1983) (holding that “[a]bsent some personal gain, there has been no breach of duty to stockholders” when a company insider reveals material nonpublic information to an outsider who subsequently trades on the basis of such information).

¹³ This application of Rule 10b-5 has caused leading commentators to object to the terms “insider” and “insider trading” as outmoded. See LOSS & SELIGMAN, *supra* note 10, § 9-B-1 n.1 (“‘[I]nsider trading’ is a

misappropriates confidential information for securities trading purposes, in breach of a duty owed to the source of the information.”¹⁴

In the decades since SEC and the courts recognized insider trading as a form of securities fraud, an entire literature has grown up around the issue, seeking to attack, defend, justify and critique the idea, often from an economic point of view.¹⁵ Although the hypothesis in Part III relies on the economics literature regarding the empirical effects of insider trading, this Article will studiously avoid wading into the *normative* debate over whether or to what extent insider trading should be prohibited. Instead, it assume the negative character of insider trading, based on the current state of the law and the expressed policy goals of the SEC, and evaluate Rule 10b5-1 on that basis.

misnomer. . . A more precise phrasing would refer to illegal trading on the basis of material nonpublic information.”). Although the Supreme Court has at times employed the more general term “misappropriator,” the distinction is immaterial for our purposes and so this Article will continue to use the term “insider.”

¹⁴ *O’Hagan*, 521 U.S. at 652 (holding a lawyer liable for insider trading where he bought stock in the company that was the *target* a client’s tender offer, i.e. where he owed no duty to the company whose securities he purchased). Thus the lawyer defrauded his *firm* in connection with his purchase of securities. The Court explained its reasoning as follows:

[The requirement that] the misappropriator’s deceptive use of information “be in connection with the purchase or sale of [a] security” . . . is satisfied because the fiduciary’s fraud is consummated, not when the fiduciary gains the confidential information, but when, without disclosure to his principal, he uses the information to purchase or sell securities. The securities transaction and the breach of duty thus coincide. This is so even though the person or entity defrauded is not the other party to the trade, but is, instead, the source of the nonpublic information. A misappropriator who trades on the basis of material, nonpublic information, in short, gains his advantageous market position through deception; he deceives the source of the information and simultaneously harms members of the investing public.

Id. at 655–56.

¹⁵ See generally LOSS & SELIGMAN, *supra* note 10, § 9-B-1 n.1 (listing approximately 130 authorities).

II. RULE 10b5-1

A. The Rule

Before 2000 there was a split among the circuits on the question of what constituted trading “on the basis of material, nonpublic information,” as formulated by the Supreme Court.¹⁶ In its rulemaking release for Rule 10b5-1, the SEC framed the split as follows:

[O]ne unsettled issue in insider trading law has been what, if any, causal connection must be shown between the trader's possession of inside information and his or her trading. In enforcement cases, [the SEC] argued that a trader may be liable for trading while in “knowing possession” of the information. The contrary view is that a trader is not liable unless it is shown that he or she “used” the information for trading. . . . Three recent courts of appeals cases addressed the issue but reached different results.¹⁷

The SEC therefore promulgated Rule 10b5-1, which provides that “a purchase or sale of a security of an issuer is ‘on the basis of’ material nonpublic information about that security or issuer if the person making the purchase or sale was aware of the material nonpublic information when the person made the purchase or sale.”¹⁸ In other words,

¹⁶ *O’Hagan*, 521 U.S. at 656.

¹⁷ 10b5-1 Release, *supra* note 11, at 51,727 (comparing *United States v. Teicher*, 987 F.2d 112, 120-21 (2d Cir. 1993) with *SEC v. Adler*, 137 F.3d 1325, 1337 (11th Cir. 1998) and *United States v. Smith*, 155 F.3d 1051, 1069 & n.27 (9th Cir. 1998)).

¹⁸ 17 C.F.R. § 240.10b5-1(b).

the SEC defined the caselaw so that no causal link need be shown between the material nonpublic information and the trade itself.¹⁹

Concurrently, however, the SEC created a safe harbor “designed to cover situations in which a person can demonstrate that the material nonpublic information was not a factor in the trading decision.”²⁰ The safe harbor, in subsection (c) of Rule 10b5-1, allows people “to structure securities trading plans and strategies when they are not aware of material nonpublic information, and do not exercise any influence over the transaction once they do become aware of such information.”²¹ Specifically, the safe harbor covers a person who, “[b]efore becoming aware of the information . . . had: (1) [e]ntered into a binding contract to purchase or sell the security, (2) [i]nstructed another person to purchase or sell the security for the instructing person’s account, or (3) [a]dopted a written plan for trading securities.”²² The actual securities transaction then must be pursuant to the plan, with the caveat that:

A purchase or sale is not pursuant to a contract, instruction, or plan if, among other things, the person who entered into the contract, instruction, or plan altered or deviated from the contract, instruction, or plan to purchase or sell securities (whether by changing the amount, price, or timing of the purchase or

¹⁹ Whether the SEC possesses the power to define *caselaw*—which itself defines a statute—is a question not addressed in this Article. *Cf.* *Ernst & Ernst v. Hochfelder*, 425 U.S. 185, 212–213 (1976) (“The rulemaking power granted to an administrative agency charged with the administration of a federal statute is not the power to make law.”).

²⁰ 10b5-1 Release, *supra* note 11, at 51,728.

²¹ *Id.*

²² 17 C.F.R. § 240.10b5-1(c)(1)(i)(A).

sale), or entered into or altered a corresponding or hedging transaction or position with respect to those securities.²³

Finally, this pre-planned trading safe harbor “is applicable only when the contract, instruction, or plan to purchase or sell securities was given or entered into in good faith and not as part of a plan or scheme to evade the prohibitions of this section.”²⁴

B. The Loophole

If Rule 10b5-1 allowed insiders to trade on the basis of material nonpublic information only when those trades were pursuant to irrevocable, previously established plans, then insiders would be unable to make use of their information. They could freely trade or create plans so long as they did not have inside information—but once they did, they would no longer be able to act on it, because no new plan could be created and the existing plan would be irrevocable under Rule 10b5-1(c).²⁵

There is a glitch, however: this is not how Rule 10b5-1 actually works. Recall that Rule 10b5-1 does not independently require that a pre-planned trade be irrevocable: it merely prohibits an insider from *executing* a “pre-planned” trade that was “altered or deviated from” after the insider acquired material nonpublic information.²⁶ In other

²³ 17 C.F.R. § 240.10b5-1(c)(1)(i)(C).

²⁴ 17 C.F.R. § 240.10b5-1(c)(1)(ii).

²⁵ See Fried, *supra* note 4, at 487–89 (explaining how the rule is supposed to work). Fried demonstrates the corollary to this proposition: that those with material nonpublic cannot make above-market returns on their trades under Rule 10b5-1 because the gain from being able to execute irrevocable and *advantageous* pre-planned trades would be symmetrically offset by the cost of being forced to execute irrevocable and *disadvantageous* pre-planned trades. *Id.*

²⁶ 17 C.F.R. § 240.10b5-1(c)(1)(i)(C). The SEC has also expressly articulated one logical corollary of Rule 10b5-1, namely that “a person acting in good faith may modify a prior contract, instruction, or plan before becoming aware of material nonpublic information. In that case, a purchase or sale that complies with the

words, because the irrevocability requirement is simply part of a *safe harbor* to Rule 10b-5 (the general antifraud rule²⁷), Rule 10b5-1's requirement that plans be irrevocable has no applicability to conduct falling outside of the scope of Rule 10b-5 – such as, arguably, the act of *cancelling* a pre-planned trade and making no trade at all. The SEC staff has actually adopted this very argument: since 2001, the staff has publicly taken the position that “terminating a plan while aware of material nonpublic information [will not] result in liability under Section 10(b) and Rule 10b-5 . . . [because] Section 10(b) and Rule 10b-5 apply ‘in connection with the purchase or sale of any security’ [and so] a purchase or sale of a security must be present for liability to attach.”²⁸ Accordingly, although much could be written on the legal question of whether Rule 10b-5 extends to cancelled securities transactions²⁹ (and whether that answer changes when the legal action is

modified contract, instructon,[sic] or plan will be considered pursuant to a new contract, instruction, or plan.” 10b5-1 Release, *supra* note 11, at 51,728 n.111.

²⁷ See *supra* notes 9-10 and accompanying text (discussing § 10(b) of the Exchange Act and Rule 10b-5 thereunder).

²⁸ SEC, Div. of Corp. Fin.: Manual of Publicly Available Telephone Interpretations, May 2001, available at <http://www.sec.gov/interps/telephone/phonesupplement4.htm> (last visited Feb. 19, 2007) (citing *Blue Chip Stamps v. Manor Drug Stores*, 421 U.S. 723, 727 (1975)). In *Blue Chip Stamps*, the Supreme Court upheld the dismissal of a private 10b-5 action for opportunity cost damages, where plaintiffs alleged that the defendant's deceptively pessimistic prospectus caused them *not* to purchase shares of the stock, which subsequently performed well. See *id.* at 726 (“Respondent's complaint alleged, *inter alia*, that the prospectus prepared and distributed by Blue Chip in connection with the offering was materially misleading in its overly pessimistic appraisal of Blue Chip's status and future prospects.”).

²⁹ The SEC could argue, for example, that even if the potential securities transactions in *Blue Chip Stamps* were not within the scope of the Rule 10b-5, more concrete potential transactions may be – that the “purchase or sale of [a] security” requirement in Section 10(b) of the Exchange Act cannot be read literally. In *SEC v. Lauer*, for instance, the Seventh Circuit was faced with a fraud so devoid of substance that it may not have involved any securities at all. See 52 F.3d 667, 669 (7th Cir. 1995) (noting that the fraud was “so complete and bare-faced that it ordinarily would be dealt with under the mail or wire fraud statutes or other criminal statutes not specialized to the securities market”). In other words, the purported “investment” did not actually meet the requirements of a security because it did not actually exist. See *id.* at 670-71 (“This first argument of Lauer's blends insensibly into his second, that the securities laws do not apply to frauds so complete, so pure, that no pooling would ever take place. Prime Bank Instruments do not exist.”). The court concluded that “[i]t would be a considerable paradox if the worse the securities fraud, the less applicable the securities laws,” and held that, because the

brought by the government instead of a private plaintiff³⁰), the SEC has effectively taken the issue away from the courts by deciding against itself.³¹

“investment” was “represent[ed] . . . as being an investment contract,” it fell within the scope of Section 10(b) and Rule 10b-5. *Id.*

³⁰ The SEC could argue that *Blue Chip Stamps* merely limits the implied *private* right of action under Rule 10b-5. See *Blue Chip Stamps*, 421 U.S. at 727 (addressing “what limitations there are on the class of plaintiffs who may maintain a private cause of action for money damages for violation of Rule 10b-5, and whether respondent was within that class”). See generally Alexander P. Robbins, Comment, *After Howard and Monetta: Is Ignorance of the Law a Defense to Administrative Liability for Aiding and Abetting Violations of the Federal Securities Laws?*, 74 U. CHI. L. REV. 299, 304–05 (2007) (offering background on SEC enforcement actions and the various statutory provisions under which different remedies may be sought). Private plaintiffs, unlike the SEC, have no express right of action – the courts have simply implied a private right of action based on common law principles, see *Dura Pharm., Inc. v. Broudo*, 544 U.S. 336, 341 (2005) (“The courts have implied from these statutes and Rule a private damages action, which resembles, but is not identical to, common-law tort actions for deceit and misrepresentation . . . [a]nd Congress has imposed statutory requirements on that private action.”) – and the courts have imposed concomitant common law limitations. In particular, not only must a private plaintiff establish a substantive violation of Rule 10b-5, which requires (1) a material misrepresentation or omission, (2) scienter, and (3) a connection with the purchase or sale of a security, a private plaintiff must also allege (4) reliance, (5) economic loss, and (6) loss causation. *Dura Pharm.*, 544 U.S. at 346 (“The statute thereby makes clear Congress’ intent to permit *private* securities fraud actions for recovery where, but only where, plaintiffs adequately allege and prove the traditional elements of causation and loss.”) (emphasis added). Given the facts, the SEC could argue that *Blue Chip Stamps*, like *Dura Pharm.*, is really a case about the private-right element of “loss causation,” and therefore inapplicable to enforcement actions – or, for that matter, criminal prosecutions, which are also expressly authorized by statute, see 15 U.S.C. 78ff(a).

³¹ In theory private plaintiffs could attempt to bring 10b-5 actions against insiders for cancelling their pre-planned trades based on inside information, but a few practical hurdles present themselves. First, individual insiders, even wealthy ones, may have relatively shallow pockets compared to corporate defendants, and may therefore be less attractive to potential private plaintiffs. Second, private plaintiffs (unlike the SEC) must suffer actual monetary loss as a result of defendants’ fraudulent activity. See *Dura Pharm., Inc. v. Broudo*, 544 U.S. 336, 341–42 (2005) (listing loss as an element to a private right of action for securities fraud under Rule 10b-5). Third, private plaintiffs are significantly limited in their ability to gather information in the first place; in the complaint itself, before discovery, they must allege “with particularity” each statement or omission alleged to have been misleading. See Private Securities Litigation Reform Act of 1995 (PSLRA), Pub. L. No. 104-67, 109 Stat. 737 (1998), codified at 15 USCS § 78u-4. Fourth and perhaps most importantly, although Rule 10b5-1 characterizes itself as an “affirmative defense,” see 17 C.R.F. § 240.10b5-1(c), some district courts appear to consider the existence of 10b5-1 plans when ruling on motions to dismiss. See, e.g., *In re Immucor Inc. Sec. Litig.*, 2006 U.S. Dist. LEXIS 72335 (D. Ga. Oct. 4, 2006) (considering the existence of a 10b5-1 plan, *noted by defendants*, when ruling on whether the facts alleged give rise to a “strong inference of scienter” as required by the PSLRA); *In re Vistacare, Inc. v. Freeman*, 2006 U.S. Dist. LEXIS 62021 (D. Ariz. Aug. 29, 2006) (same); *In re Lab. Corp. of Am. Holdings Secs. Litig.*, 2006 U.S. Dist. LEXIS 31232 (D.N.C. May 18, 2006) (same); *Limantour v. Cray Inc.*, 432 F. Supp. 2d 1129, 1151 (D. Wash. 2006) (noting that, although the “use of 10b5-1 plans is an affirmative defense, which . . . is not appropriately before the Court on a motion to dismiss. . . . the use of the plans may raise an inference in Defendants’ favor that the sales may not be suspicious”); *Fener v. Belo Corp.*, 425 F. Supp. 2d 788, 814 (D. Tex. 2006) (“What matters at this stage of the case is whether plaintiffs . . . address[ed] in their complaint whether Decherd sold his stock pursuant to a Rule 10b5-1 trading plan formulated before the alleged fraudulent scheme and why, if he did, this does not undercut a strong

Commentators, both in the academy and the press, have noted the significance of this loophole in 10b5-1's irrevocability requirement: if insiders are allowed to cancel trades on the basis of material, nonpublic information, and make no trades at all,³² then they can still effectively make use of material nonpublic information in the securities markets.³³ Insiders can simply make pre-planned trades when they do not have material nonpublic information, and then, once they obtain material nonpublic information, either keep a pre-planned trade if it is advantageous or discard it if it is not.³⁴ In economic terms, insiders can make opportunity profits on the basis of inside information; in finance terms, 10b5-1 plans give them an option to trade on the basis of inside information.

At some point, an insider's repeated plan cancellations might remove his completed transactions from the safe harbor by evincing a lack of good faith or a scheme of evasion,³⁵ and the SEC staff³⁶ and commentators³⁷ have made note of this.

inference of scienter."). *But see In re Cardinal Health, Inc. Sec. Litigs.*, 426 F. Supp. 2d 688, 734 (D. Ohio 2006) ("[I]t is typically premature to raise affirmative defenses in a motion to dismiss, this Court will not consider the impact of Jensen's purported 10b5-1 trading plan at this stage of the pleadings.").

³² Though Rule 10b5-1 would prohibit any offsetting or hedging transactions. *See* 17 C.F.R. § 240.10b5-1(c)(1)(i)(C).

³³ *See, e.g.,* Fried, *supra* note 4, at 490-92 (noting that the ability to cancel trades on the basis of inside information will allow insiders to make above-market profits); Tony Cooke and Serena Ng, *Moving the Market -- Tracking the Numbers / Street Sleuth: Insiders Prosper Despite SEC Rule --- Even With Planned Trades, Executives Still Can Beat Overall Market Performance*, WALL ST. J., at C3 (Aug. 5, 2005). Another possible mechanism that "true" insiders could use is to time firm announcements based on their pre-planned trades. *See* Nicolas Brulliard, *Insider Rules Don't Address Scheduling of Announcements: Incentives May Exist to Alter Timing of News to Accommodate Trades*, WALL ST. J., at C14 (Oct. 12, 2005).

³⁴ *See* Fried, *supra* note 4, at 490-91 (explaining that in this situation insiders can make above-market returns using material nonpublic information, because the gains to pre-planned advantageous trades are no longer symmetrically offset by the losses associated with irrevocable, disadvantageous pre-planned trades).

³⁵ 17 C.F.R. § 240.10b5-1(c)(1)(ii);

³⁶ SEC Corp. Fin Manual (question 15(b)) ("Termination of a plan, or the cancellation of one or more plan transactions, could affect the availability of the Rule 10b5-1(c) defense for prior plan transactions if it calls

Nevertheless, good faith requirements are most effective as backstops to egregious conduct, since otherwise they would be a sufficient basis for our legal system – even with this good faith requirement, the 10b5-1 loophole should still allow a significant amount insider trading. Because Section 10(b) and Rule 10b-5 are limited to actual trades, they allow insiders to make opportunity profits by making pre-planned trades, obtaining material nonpublic information, and then using that information to keep the good trades and discard the bad ones without fear of liability.

III. HYPOTHESIS

The analysis suggests that the Rule 10b5-1 safe harbor effectively allows insiders to make use of their inside information through abstention, by cancelling pre-planned trades. The presence of usable, material nonpublic information in the market for a security should increase the informational asymmetry in that market in certain empirically verifiable ways.³⁸ One possible effect might be that the existence of Rule 10b5-1 has increased average informational asymmetry in all securities markets subject to the SEC's jurisdiction. While plausible, such a hypothesis would be very difficult to test, given the risk of a spurious correlation with any number of variables that might also be changing over time.

into question whether the plan was "entered into in good faith and not as part of a plan or scheme to evade" the insider trading rules within the meaning of Rule 10b5-1(c)(1)(ii). The absence of good faith or presence of a scheme to evade would eliminate the Rule 10b5-1(c) defense for prior transactions under the plan.").

³⁷ Fried, *supra* note 4, at 490 ("Presumably, an insider who cancels trading plans repeatedly would lose the benefit of the safe harbor.").

³⁸ See LOSS & SELIGMAN, *supra* note 10, § 9-B-1 (discussing arguments for and against insider trading). Note that information asymmetry may exist in a market for a variety of other reasons: for example, insiders may have useful information that is not specific enough in nature to meet the legal standard of materiality, such as a well-founded hunch, or information that was not in any way misappropriated.

Fortunately, there is another option. Since Rule 10b5-1 was promulgated in 2000, a substantial number of firms have voluntarily disclosed the existence and rough duration of trading plans within the Rule 10b5-1 safe harbor (“10b5-1 plans”) that were being undertaken by their insiders. Admittedly, it is not entirely clear why firms do this in the first place.³⁹ One reason might be to prevent negative market effects associated with disclosing insider trades *ex post* through their required SEC filings⁴⁰—this theory finds some support in the fact that *all* of the publicly announced 10b5-1 plans used in this study were for *sales* of securities by insiders. A related reason might be to establish good faith, a clear paper trail, or both, thus providing extra layers of defense to potential liability as well as a signal the SEC and private plaintiffs.⁴¹ Whatever the reason, there is only one other empirical study of 10b5-1 plans to date: that study, undertaken by Alan Jagolinzer of Stanford University, relies on both Form 4 filings⁴² as well as voluntarily disclosed 10b5-1 plans.⁴³

³⁹ The SEC has considered requiring public disclosure of the plans, *see* Disclosure of Certain Management Transactions, Securities Act Release No. 8090, Exchange Act Release No. 45,742, 77 S.E.C. Docket 1072, 2002 WL 538909 (Apr. 12, 2002), but apparently this proposal was tabled indefinitely in 2003, *see* Jagolinzer, *supra* note 5, at 6.

⁴⁰ This filing is required for a variety of circumstances involving sales of securities by insiders. *See generally* LOSS & SELIGMAN, *supra* note 10, § 3-D-2 (describing the circumstances). Certain insiders also have to reveal their ownership portions in the firm’s annual 10-K filing.

⁴¹ The usefulness of 10b5-1 plans as a signal to ward off private plaintiffs is supported by the tendency of some courts to treat 10b5-1 plans as a defense at the pleadings stage. *See supra* note **Error! Bookmark not defined.** This hypothesis is also consistent with the fact that all observed 10b5-1 plans were for sales, since private plaintiffs, unlike the SEC or United States government, can only take legal action where they suffered a loss. *See supra* note 31 (citing *Dura Pharm.*).

⁴² *See* 17 C.F.R. § 249.104 (describing the Form 4, which “shall be filed pursuant to Rule 16a-3 (§ 240.16a-3 of this chapter) for statements of changes in beneficial ownership of securities”). Form 4 thus governs *literal* “insider trades,” requiring disclosure whenever certain insiders—i.e. officers, directors, or large-stake owners of the corporation—transact in the corporation’s securities. *See* 17 C.R.F. § 240.16a-3.

⁴³ Jagolinzer, *supra* note 5, at 10–11 (describing the data sources). Jagolinzer notes that the self-selecting nature of publicly disclosed plans may bias his empirical results by *understating* their magnitude, since

Unlike Jagolinzer's study, this Article seeks to examine the effect of Rule 10b5-1 trading plans on the *market* rather than the *individual*. Accordingly, it looks exclusively at publicly disclosed 10b5-1 plans, since only those plans will have a measurable effect on the markets for the affected securities. This does not mean that the *possibility* of 10b5-1 plans – and the attendant ability of insiders to make use of their insider information – has no broad effect on the securities markets. It is simply much more difficult to measure.⁴⁴ This study therefore examines the empirical effects of specific, public, and non-random 10b5-1 plans on the markets for individual firms.⁴⁵ Unfortunately, examining the effect of 10b5-1 plans on the market entails the risk of biased results if the firms that disclose their plans systematically differ from those that do not.⁴⁶

Whatever the reason for the voluntary disclosure of 10b5-1 plans, this second approach to investigating whether the plans increase informational asymmetry focuses

presumably it is easier for insiders to cancel their planned trades when they never announced those trades to begin with. *Id.* at 11 n.25.

⁴⁴ One would have to look at the broad effect of Rule 10b5-1 pooled across markets, using time series macroeconomic data before and after its implementation. Essentially there would only be two data points – before and after – and this would give an imprecise measurement as well as entail serious risk of spurious correlation with other factors that also vary across time. *See generally* JEFFREY M. WOOLDRIDGE, *INTRODUCTORY ECONOMETRICS: A MODERN APPROACH* (2d. Ed. 2003) chs. 10-12 (discussing approaches to panel data).

⁴⁵ Note that, in fact, the 10b5-1 plans would not actually have to exist: the relevant question is how the market reacts when it *thinks* they exist.

⁴⁶ It is not immediately apparent in which direction this bias would operate. On one hand, it seems plausible that insiders at firms with better corporate governance would be more likely to publicly disclose their 10b5-1 plans and would also be less likely to cancel their plans based on material nonpublic information. In this case the results will still be perfectly valid, since the true effect would be even greater. *Cf. supra* note 43 (in which Jagolinzer notes that his results, if biased, are likely of a smaller magnitude than they should be). The other possibility is that insiders at firms with poor corporate governance – which may be under greater scrutiny from the plaintiff's bar or the SEC – are more likely to enter into 10b5-1 plans, which would undermine the results if in fact that were the case. So long as the SEC does not require disclosure of 10b5-1 plans, *see supra* note 39, there is no way to overcome this problem.

specifically on firms that are the subject of a 10b5-1 plan. Whereas Jagolinzer only examined profits made by insiders using 10b5-1 plans,⁴⁷ this study examines the effects of those 10b5-1 plans on the markets for the affected securities. The two ideas are related but theoretically distinct. Both proponents and opponents of legalized insider trading generally assume it will help insiders by allowing them to make above-market returns.⁴⁸ Opponents, however, generally argue that insider trading has significant negative effects on the market: particularly through increase price volatility,⁴⁹ reduced stock liquidity,⁵⁰ and decreased allocative efficiency.⁵¹ Under these theories, Rule 10b5-1 plans, if they effectively allow trading on the basis of material nonpublic information, should have empirically verifiable effects on the market – though a proponent of insider trading could still plausibly argue that the positive effects outweigh the negative. Regardless of whether they are outweighed by countervailing advantages, negative market effects associated with insider trading are two of the three empirical indicia examined by this Article. The other effect, abnormal returns, is not necessarily bad; moreover, this Article examines it as an *indicator* that 10b5-1 plans are allowing insiders

⁴⁷ See Jagolinzer, *supra* note 5, at 2. Fried similarly focuses his analysis on *insiders'* ability to make supra-competitive returns. See Fried, *supra* note 4, at 490.

⁴⁸ See Fried, *supra* note 4, at 455–56.

⁴⁹ See RICHARD A. POSNER, *ECONOMIC ANALYSIS OF THE LAW* (6th Ed. Aspen 2003) at 433–434 (noting that insiders who wish to trade on insider information have an incentive to increase stock volatility so as to make larger short-term profits from their transactions); see also Christian Leuz & Robert Verrecchia, *The Economic Consequences of Increased Disclosure*, 38 J. ACCT. RESEARCH 91, 99 (2000) (noting the theoretical but context-sensitive effect of informational asymmetry on return volatility).

⁵⁰ See Douglas A. Diamond & Robert E. Verrecchia, *Disclosure, Liquidity, and the Cost of Capital*, 46 J. FIN. 4 (1991) (demonstrating theoretically that the price liquidity of a firm's securities decreases in the presence of asymmetric information about the firm). Note, however, the possibility that trade volume might increase due to the insider's own trades, or to the extent that the public mimics the trading behavior that he announces in his 10b5-1 plan. See Part VI below (discussing this possibility).

⁵¹ See LOSS & SELIGMAN, *supra* note 10, § 9-B-1 (explaining that insider trading may inefficiently decrease the amount of wealth invested in the capital markets by providing above-market profits to some and below-market profits to others).

to make use of their inside information rather than as a *symptom* of the presence of asymmetric information.

The first negative, empirically verifiable effect of asymmetric information relates to a stock's liquidity. The liquidity of a firm's securities should decrease in the presence of (useful, i.e. "tradeable") asymmetric information.⁵² Asymmetric or "inside" information in the market for a stock increases the risk that an uninformed "outsider" will be dealing with "insider" who has better information on the value of the stock than the outsider does. This is referred to as an "adverse selection" problem: since an uninformed outsider would generally be unwilling to take a position opposite to an informed insider, the probability of dealing with an insider increases the riskiness of the transaction.⁵³ Because of this risk, the outsider will, *ceteris paribus*, be less willing to trade, and this will reduce liquidity. Thus diminished trade volume is not only a proxy for the presence of asymmetric information, but actually one of the negative symptoms arguably associated with it.

Another possible negative effect of asymmetric information in the market for a firm's securities is based on the volatility of the returns on those securities.⁵⁴ This relationship is contested, however, and even if valid it may rely on different theories. One theory posits that because nonpublic information is only revealed through trading, whereas public information is by definition immediately incorporated into a stock's

⁵² See Diamond & Verrecchia, *supra* note 50.

⁵³ See, e.g., Leuz & Verrecchia, *supra* note 49, at 99.

⁵⁴ See K.D. West, *Dividend Innovations and Stock Price Volatility*, 56 *ECONOMETRICA* 1 (1988) (arguing that volatility should increase in asymmetric information); see also POSNER, *supra* note 49, at 433-434. Returns are commonly used instead of prices because prices are produced by a random-walk process and are therefore serially correlated over time.

price, the activity of traders who are driven by nonpublic information will cause additional price (and therefore return) fluctuations.⁵⁵ This is a contested theory, however, and it might be conversely possible that informational efficiency would result in more sudden price fluctuations and thus higher volatility.⁵⁶ A more intuitively obvious theory is that the ability of insiders to trade on the basis of material nonpublic information induces those insiders to *cause* price fluctuations in their own firms, allowing them to make increased profits through their informed trades.⁵⁷ Under this theory, volatility (like liquidity) is both an indicator and negative symptom of informational asymmetry. This theory, however, relies on managers' perverse incentives, and thus only predicts an increase in return volatility when *managers* trade on the basis of material nonpublic information.⁵⁸

In conclusion, the hypothesis of this Article is that the publicly-known presence of an insider's Rule 10b5-1 plan for a particular stock allows the insider to make use of inside information (which will affect abnormal returns), and will therefore increase the information asymmetry (as indicated by liquidity and volatility) in the market for that stock during the time period in which the plan is active.

⁵⁵ See Michael J. Barclay, Robert H. Litzenberger, & Jerold B. Warner, *Private information, trading volume, and stock-return variances*, REV. FIN. STUDS., 3, 233-253 (1990).

⁵⁶ See Paul Mahoney & Jianping Mei, *Mandatory vs. contractual disclosure in securities markets: Evidence from the 1930s* 14 (working paper) (Oct. 2005), *available at* <http://www.law.uchicago.edu/Lawecon/workshop-papers/mahoney.pdf> (last visited Feb. 19, 2007) (discussing and citing sources for both theoretical positions); *see also* Leuz & Verrecchia, *supra* note 49, at 99-100 (referring to volatility as the "least reliable" amongst their proxies for asymmetric information).

⁵⁷ See POSNER, *supra* note 49, at 433-434.

⁵⁸ *Cf. United States v. O'Hagan*, 521 U.S. 642, 652 (1997) (where a lawyer traded on the basis of material nonpublic information regarding a non-client corporation).

IV. DATA

The data for this study consist of daily closing prices and trade volumes for 81 firms listed on the National Association of Securities Dealers Automated Quotation System (“NASDAQ”) from January 1, 2004,⁵⁹ through January 31, 2006. The firms comprise all of those that were the subject of a Rule 10b5-1 plan that was publicly announced on Business Wire between the same dates.⁶⁰ The panel dataset used in this study contains a total of 40,721 observations,⁶¹ where one observation is of given firm on a given date within the time period.

Based on the date of a firm’s announcement of a 10b5-1 plan (all of which were for sales) and whatever information the announcement contained regarding the start and end dates of the plan,⁶² each daily observation for each firm in the dataset contains the following primary data:

- The firm’s stock ticker symbol
- Whether the date is between the plan’s announcement date and its end date

⁵⁹ This date picks up where the first version of Jagolinzer’s study left off—his study was based on data from NASDAQ firms from the date of Rule 10b5-1’s enactment on October 21, 2000, through December 31, 2003.

⁶⁰ Based on a LEXIS search of Business Wire for: <“10b5-1” and “NASDAQ” AND NOT “repurchase”>. The exclusion of repurchases was to screen out 10b5-1 plans filed by holding companies and focus on trades by human insiders. The date of the plan’s announcement is known for all firms; the start and end dates for the plan are also known for the majority of the firms in the data.

⁶¹ The daily price and volume data was obtained from Yahoo! Finance Online using a Perl program that read through each line of an initial dataset—containing only the ticker symbols of each firm, the announcement date of the 10b5-1 plan, and (if revealed) the start and end dates of the plan—and automatically downloaded the price and volume data for that firm within the date range into the master dataset.

⁶² The relevant portion of typical plan might look something like this: “Mr. Y, Chairman and CEO of X Corp., has entered into a plan to sell securities pursuant to SEC Rule 10b5-1. The planned sales will begin in July of this year, and may continue for 18 months.”

- Whether the date is between the plan's start date and its end date⁶³
- The closing price⁶⁴ a share of the firm's stock
- The volume of shares of stock traded
- The closing NASDAQ composite index value
- The volume of shares traded on NASDAQ

Univariate statistics for these data – along with other values calculated using these data, such as daily returns – are listed in Appendix I. Firm-specific information – including ticker symbols, effective dates of 10b5-1 plans, and firm β coefficients⁶⁵ – is listed in Appendix II.

Initially, this study included additional data regarding each firm, in the form of dummy (or “binary” or “dichotomous”) variables representing additional information about the announcement.⁶⁶ However, after running some regressions on an earlier and more limited dataset consisting of approximately thirty firms, I found that none of these variables were significant, and so I stopped recording them and omitted the ones I already had from my final data. I also originally recorded whether the plan was for a purchase or a sale, although I have omitted that variable as well since *every* plan in the final dataset was for a sale of securities.

⁶³ Part V details how these variables are coded.

⁶⁴ Adjusted for splits and reverse splits.

⁶⁵ Firm β 's are calculated using interaction terms between market returns and firm dummies, as described below.

⁶⁶ Specifically, whether the announcement contained: (1) an express disclaimer stating that a plan *could* be altered after taking effect; (2) a stated price at which sales or purchases *would* be made under the plan, an express statement that the plan was *irrevocable*; and (3) a statement promising to publicly disclose trades under the plan. There were also dummies for (4) whether the plan was being undertaken by an officer and (5) whether the plan was being undertaken by a board member or substantial owner.

V. METHODOLOGY

My hypothesis is a 10b5-1 plan for given security increases the observable indicators of asymmetric information in the market for that security. To test this hypothesis I estimate the following general model:

$$Y_{it} = \Omega\tau_{it} + (\text{control variables}) + \mu_{it}, \quad (1),^{67}$$

where Y_{it} is a measure of asymmetric information (liquidity, return volatility, or abnormal returns for a given stock on a given date), τ_{it} is a dummy variable for whether a stock was within a effective 10b5-1 “plan period,” and μ_{it} is the residual term. Ω is the parameter of interest: the end purpose of this study. If we can reject the hypothesis that Ω is equal to zero, then the existence of a pending and public 10b5-1 plan has a significant effect on some measure of asymmetric information. The variables τ_{it} and Y_{it} were measured in a number of different ways, discussed below:

A. τ_{it} : Whether Trading of a Given Stock at a Given Time Takes Place During a Period in which a 10b5-1 Plan is Publicly Effective (During a “Plan Period”).

The “plan period” variable τ_{it} was coded two different ways: (1) as being equal to one at any time between the *announcement* of the 10b5-1 plan and the stated termination of the plan, inclusive, and zero otherwise, and (2) as being equal to one at any time between the specified *start date* of a 10b5-1 plan and the stated termination of the plan, inclusive, and zero otherwise. In the case of a firm where there was no plan-specified start date, the start date was set as equal to the announcement date (and thus the two measures of τ_{it} were identical). In the case of a firm without a specified end date, τ_{it} was

⁶⁷ The actual STATA regressions are listed in Appendix III and cross-referenced to the numbered equations in this Part.

coded as equal to one for all times at and after the announce / start date. In cases where there were multiple distinct plans for the same firm, $\tau_{it} = 1$ for all days during *any* effective plan period, because the focus what effect the pendency of a 10b5-1 plan has on the market for the affected security. Finally, since the hypothesis is concerned with *publicly known* 10b5-1 plans, $\tau_{it} \equiv 0$ for all times before the announce date, unless the first announcement was of the *termination* of a plan (which occurred in only a few instances). In all of the following equations, τ_{it} was calculated using both definitions of plan period.

2. Y_{it} : Information Asymmetries in the Market for a Security.

The variable Y_{it} was measured in three different ways, each relating to a different aspect of information asymmetry in the market for a given security: (1) abnormal returns, (2) return volatility, and (3) liquidity.⁶⁸ Liquidity was normalized to be the ratio of the firm's daily trade volume to the firm's average daily trade volume. Return volatility was measured alternatively as (a) the absolute value of abnormal returns, (b)

⁶⁸ Originally, this study used a fourth measure. Following the approach of Mahoney and Mei, it used a measure of the negative serial covariance between stock returns to give an implied measure of effective bid-ask spread. See Mahoney & Mei, *supra* note 56, at 13. The theory is that the negative serial covariance or "bounce" between prices will be an unbiased proxy for average effective bid-ask spreads—so long as the function that determines the "price draws," or incoming buy and sell orders, remains constant. See Richard Roll, *A Simple Implicit Measure of the Effective Bid-Ask Spread in an Efficient Market*, 39 J. FIN. 4 (Sept. 1984). Using returns rather than prices is necessary to eliminate the strong positive serial correlation that comes from the random walk process associated with stock prices. Roll's measure, however, has come under fire for being based on the frail assumption of a constant price-draw function: to the extent that the underlying profitability of the firm changes over time, the serial covariance of stock prices may be positive rather than negative, and at the very least such a change will decrease the "bounce" or negative covariance on which Roll's model depends. See J.Y. Choi, Dan Salandro, & Kuldeep Shastri, *On the Estimation of Bid-Ask Spreads: Theory and Evidence*, 23 J. FIN. & QUANT. ANALYSIS 2 (June 1988); see generally CAMPBELL, LO, & MACKINLAY, *THE ECONOMETRICS OF FINANCIAL MARKETS* (Princeton University Press 1997) § 3.2 at 101-07 (discussing an alternative model in which negative serial covariance is not caused by adverse selection due to asymmetric information). Although this study did examine negative serial covariance of returns, it found no statistically significant relationship with any measure of plan period.

the square of abnormal returns, and (c) the square of the difference of a stock's daily return from its average returns.

a) *Abnormal returns.*

Abnormal returns were calculated by taking the residuals from a regression of each firm's return on the market (here, the NASDAQ) return. In other words, abnormal returns are the residual terms ε_{it} from an estimation of the model:

$$r_{it} = \alpha_i + \beta_i r_{Mt} + \varepsilon_{it} \quad (2)$$

for stock i , where r_{it} is the return of stock i on date t , r_{Mt} is the return of the market on date t , β (by convention) is the coefficient for the linear relationship between the two, and α is a constant. To obtain these abnormal returns using the panel data in this study, the model must include interaction terms between each firm dummy and the daily NASDAQ return:

$$r_{it} = \omega + \gamma r_{Mt} + \sum_{i:(1,81)} (\lambda_i a_i + \delta_i a_i r_{Mt}) + \varepsilon_{it} \quad (3),$$

where, in addition to the variables listed above, a_i is a dummy for firm i . This model allows each firm to have its own unique interaction (or β) with the market return, and thus should be correctly specified under the Capital Asset Pricing Model ("CAPM").

The parameter β_i from Equation 2 can be calculated from Equation 3 as equal to the relevant parameters on market return for a given firm i : that is, $\beta_i = \gamma + \delta_i$ (also note that $\alpha_i = \omega + \lambda_i$). These β_i values are included with other firm statistics in Appendix II.

Using the CAPM-consistent abnormal returns ε_{it} from Equation 3, the general model in Equation 1 becomes:

$$\varepsilon_{it} = \Omega_{tit} + \mu_{it} \quad (4/4.1/4.1W).$$

For robustness, I also estimate Ω using both a fixed effects and random effects model.⁶⁹ I also estimated Ω using three equations whose functional form is inconsistent with the Capital Asset Pricing Model:

$$r_{it} = \alpha + \Omega\tau_{it} + \mu_{it} \quad (5.1),$$

$$r_{it} = \alpha + \beta r_{Mt} + \Omega\tau_{it} + \mu_{it} \quad (5.2), \text{ and}$$

$$r_{it} = \alpha + \beta r_{Mt} + \Omega\tau_{it} + \sum \delta_i a_i + \mu_{it} \quad (5.3),$$

In these equations, β is forced to be the mean of all firm-specific values of β_i , because no firm-specific parameter interacts with the market return r_{Mt} , μ_{it} is the residual term, and Ω is the parameter of interest. Note that although equation 5.3 is conditioned on both market return and firm-specific fixed effects (the terms $\sum \delta_i a_i$), it is still not in a functional form consistent with the Capital Asset Pricing Model ((unlike Equation 4 calculated using Equation 3), since the estimate of β is pooled across all firms. Results for the estimation of Ω using abnormal returns as a dependent variable are reported in Table 1 in Part VI below.

b) Liquidity.

The most significant problem in examining the effect of 10b5-1 plans on stock liquidity is that the data do not contain firms' respective market capitalizations. The data do contain daily trade volumes, but trade volume is clearly going to be highly

⁶⁹ A random effects model would appear to be the most appropriate, since the dependant variable ε_{it} was already calculated controlling for fixed effects in each company. In other words, the coefficient on each company dummy should be zero: because, by definition, we expect the *abnormal* return for a given company to be zero. Because estimating a random effects model takes into account variation within companies over time, I consider this the appropriate estimator, though I also report estimates from a fixed effects model. See generally WOOLDRIDGE, *supra* note 44, at 469-73 (discussing fixed versus random effects models).

dependent on firm size.⁷⁰ Accordingly, if there is any correlation between firm size and the length of a 10b5-1 trading plan (i.e. the probability of a plan being effective on a given day), the coefficient on τ_{it} will be biased. To control for this – and to generally follow common practice when dealing with panel data containing non-random draws from a limited population such as states or provinces – the regressions control for firm-specific fixed effects.⁷¹ Moreover, the estimation may also be subject to strong heteroskedasticity,⁷² and so trade volume must be transformed somehow, so that all measures will at least be on the same order of magnitude. One way to do this is to normalize trade volume by the average daily trade volume for each firm.⁷³ Equation 1 then becomes:

$$V_{it} / V_i = \alpha + \Omega\tau_{it} + \mu_{it} \quad (6.1/6.1A/6.1W), \text{ and}$$

$$V_{it} / V_i = \alpha + \Omega\tau_{it} + V_{Mt}/V_M + \mu_{it} \quad (6.2/6.2A/6.2W),$$

where V_{it} is the daily trade volume for firm i on date t , and V_i is the expected value of daily trade volume for a given firm – i.e. $V_i = E(V_{it} | i) = (1/T)\sum V_{it}$ for all T dates in the time period for firm i .⁷⁴ For robustness, I also estimated this model with (Equation 6.2)

⁷⁰ Thus one common method for cross-sectional comparison is share turnover, or daily trade volume as a fraction of total share volume outstanding. See, e.g., Leuz & Verrecchia, *supra* note 49, at 109.

⁷¹ See WOOLDRIDGE, *supra* note 44, chs. 10–12.

⁷² See *id.* at 56, 259. Standard errors are “heteroskedastic” when they are non-uniform across the variables in the regression – in a regression where y is the dependant variable and x the independent variable, there would be heteroskedasticity if the variance of y became much larger for larger values of x . See *generally id.* ch. 8 (discussing heteroskedasticity). Heteroskedasticity does not affect the estimated coefficients, but it does affect the estimated t - and z -statistics for those coefficients, which are what allow us to determine whether the coefficients are statistically significant. See *id.*

⁷³ Firm-specific fixed effects therefore become redundant, since the coefficient on each would simply be one, because the average *normalized* trade volume for each firm is one by definition – just as the *abnormal* return for a given stock was by definition zero. See *supra* note 69. However, as I did with abnormal returns, I report results both with (Eq. 6.1) and without (Eq. 6.1W) controlling for random effects.

⁷⁴ This value was obtained by capturing the predicted values from a regression of trade volume on the firm-specific dummy variables.

and without (Equation 6.1) using the normalized trade volume of the market (NASDAQ) as a control variable. Also, because volume is censored at zero, I estimate the models using both Ordinary Least Squares (OLS) and Tobit.⁷⁵ Results for the estimation of these equations are reported in Table II in Part VI below.

c) Return volatility.

I used daily measures for volatility instead of an estimate of standard deviation or variance based on returns that was pooled across time.⁷⁶ Since the variance of a set of returns is defined as the expected square of the difference between each return and the expected value of that return, or $E[(r-E(r))^2]$,⁷⁷ the square of the residual term from a regression predicting returns, or $(r-E(r))^2$, provides a per-day measure of volatility. In other words, instead of summing the squared differences for each day in a given time period and then averaging across that time period to obtain a pooled measure of volatility, I used an un-pooled, per-day measure of return volatility and standard deviation.⁷⁸

For robustness, this study includes both squared and unsquared absolute differences between realized and expected returns as measures of return volatility (corresponding to return variance and standard deviation, respectively), both with and without controlling for fixed effects. It also used two different definitions of expected

⁷⁵ Where the Tobit models are denoted as Equations 6.1A and 6.2A. See WOOLDRIDGE, *supra* note 44, at 565–66 (explaining that Tobit estimation is appropriate for corner solutions where the dependant variable is continuously distributed across some open interval but equal to a specific value with some positive probability).

⁷⁶ See, e.g., Mahoney & Mei, *supra* note 56, at 14 (using standard deviation of returns pooled across two distinct time periods for each firm).

⁷⁷ See ZVI BODIE, ALEX KANE, & ALAN J. MARCUS, INVESTMENTS 163 (McGraw-Hill 2002).

⁷⁸ Note the difference in functional form between pooled and daily standard deviation, since a pooled standard deviations is the square root of the pooled sum.

returns, respectively conditioned on: (1) firm and time period and (2) firm and market performance. The first measure mimics the more common practice of simply comparing the variance (or standard deviation) of a firm's returns in one time period to the variance (or standard deviation) of a firm's returns in a second time period.⁷⁹ The second measure uses the abnormal returns calculated in Equation 3 above.

Thus return volatility is calculated using the following eight models, with alternatively included fixed effects being indicated in italics:⁸⁰

$$(r_{it} - E(r_i | \tau_{it}))^2 = \alpha + \Omega\tau_{it} + \sum \delta_i a_i + \mu_{it} \quad (7.1 \text{ and } 7.2),$$

$$|r_{it} - E(r_i | \tau_{it})| = \alpha + \Omega\tau_{it} + \sum \delta_i a_i + \mu_{it} \quad (7.3 \text{ and } 7.4),$$

$$\varepsilon_{it}^2 = \alpha + \Omega\tau_{it} + \sum \delta_i a_i + \mu_{it} \quad (7.5 \text{ and } 7.6),$$

$$|\varepsilon_{it}| = \alpha + \Omega\tau_{it} + \sum \delta_i a_i + \mu_{it} \quad (7.7 \text{ and } 7.8).$$

In the above equations, $E(r_i | \tau_{it})$ is the predicted value of r_{it} from a regression on τ_{it} , controlling for firm-specific fixed effects; ε_{it} is the abnormal return calculated in Equation 3 above; and all other variables are used as defined above.⁸¹ These results are reported in Table 3 in Part VI below.

VI. RESULTS

The results were generally consistent with the hypothesis that 10b5-1 plans allow insiders to make above-market returns, and that the trading public is aware of this. The results were inconsistent, however, with the hypothesis that insiders increase the price volatility of their own firms in order to trade on the basis of material nonpublic

⁷⁹ See, e.g., Mahoney & Mei, *supra* note 56, at 14.

⁸⁰ The corresponding equation numbers for the regressions including fixed effects are also indicated by italics.

⁸¹ See, e.g., Equation 5.4.

information. The results also suggested that the public attaches more importance to the public announcement of a 10b5-1 plan than to the specified start date.

Table 1

Estimates of Ω (coefficient on plan period dummy τ_{it}) using abnormal returns as dependent variable (Equations 4, 5.1, and 6.2)
(t/z-statistics in parenthesis, * denotes significance at 10% level, ** at 5% level)

	$\tau_{it} \equiv 1$ between plan <i>announce</i> date and plan end-date; 0 otherwise	$\tau_{it} \equiv 1$ between plan <i>start</i> date and plan end date; 0 otherwise
CAPM abnormal returns (random effects) (Eq. 4, calculated from Eq. 3)	-.0006348 (-1.70)*	-.0006097 (-1.63) ⁸²
CAPM abnormal returns (fixed effects) (Eq. 4.1, calc. from Eq. 3) ⁸³	-.001012 (-2.15)**	.000907 (-1.99)**
Stock returns, controlling for fixed effects (Eq. 5.1)	-.0006938 (-1.42)	-.0006426 (-1.36)
Stock returns, controlling for market returns ⁸⁴ (Eq. 5.2)	-.0008919 (-2.37)**	-.0009024 (-2.40)**
Stock returns, controlling for market returns and fixed effects (Eq. 5.3)	-.0010227 (-2.15)**	-.0009065 (-1.98)**

As noted above, all of the 10b5-1 plans in the data involved *sales*, meaning that significant negative abnormal returns during the plan period translate into above-market returns for the insider using the plan. Although these results do not offer unequivocal support for Jagolinzer’s findings that insiders are able to make above-market returns using their 10b5-1 plans,⁸⁵ they do offer significant support, and suggest the following conclusions:

⁸² This result is only marginally insignificant – the p-statistic is .103.

⁸³ The t-statistics reported for this model are calculated using on “White” or heteroskedastic-consistent standard errors. See generally WOOLDRIDGE, *supra* note 44, ch. 8 (discussing heteroskedasticity).

⁸⁴ The effects of market returns will be pooled across all stocks, rather than being firm-specific. In other words, all firm β ’s will be forced to be equal. See Part IV.2.a.

⁸⁵ See Jagolinzer, *supra* note 5, at 22–23.

First, the behavior of the market over time is not driving the abnormally low returns. In fact, it seems likely that 10b5-1 plans actually happen to occur in bull markets, because the effect of the plan period dummy on stock returns only became significantly negative when market return was partialled out.

Second, the effect of a plan period on stock returns was strongly significant, using both measures of plan period, with and without controlling for fixed effects (Equations 5.2-5.3). As noted above, these models were improperly specified: although they controlled for the effect of the market (and, in one case, for firm identity), they only estimated a single coefficient for the effect of changes in market returns on changes in stock returns.⁸⁶ In other words, all β 's are forced to be equal, whereas the Capital Asset Pricing Model posits different β 's for different stocks.

Third, when using a CAPM-consistent model (Equation 4) – calculated using interaction effects between firm dummies and market return and thereby estimating a different β for each stock (Equation 3) – the effect of a plan period is significantly attenuated (~ .06 percentage points instead of .1), and significant only at the 10% level. Nevertheless, the marginal statistical significance of this result is offset by the fact that it holds (approximately) under both definitions of plan periods, and by the fact that its specification rests on the solid foundation of the CAPM model.⁸⁷

Fourth, the coefficients on the plan periods that were defined by the plan announcement date rather than the plan start dates were generally more significant

⁸⁶ See Part V.2.a.

⁸⁷ See BODIE, ET AL., *supra* note 77.

(this finding is also born out in the results involving liquidity and return variance, discussed below). This suggests two additional possibilities: (1) that some insiders are trading before their specified plan start date, and/or (2) some fraction of the trading public considers the announcement of a plan to be a sign to begin selling because they *think* insiders will begin trading before the plan's specified start date. As noted above,⁸⁸ there are two complementary explanations for above-market profits in the presence of a 10b5-1 plan. The first is simply that insiders are using the plans to effectively trade on inside information, by establishing the plans (to sell) and then terminating them if they receive material, nonpublic good news. The number of publicly terminated plans is small, however,⁸⁹ and so a more likely explanation is that the trading public realizes that a 10b5-1 plan is a of inside – though not necessarily legally “material” – information. The trading public thus sells when the insider announces his intention to sell, rather than when the insider is allowed to start selling. If insiders routinely made 10b5-1 plans on the basis of no information at all, however, this would not be the case, because the announcement itself – as opposed to the announced pendency of the plan – would contain no useful information. This suggests that insiders do not arbitrarily create 10b5-1 plans – a possibility explored in more depth in the conclusion in Part VII below.

⁸⁸ See Part III.

⁸⁹ There were a few instances in the data where a firm announced a 10b5-1 plan and later announced its premature cancellation. Unfortunately, these instances were not coded in any distinct way – an announced cancellation simply terminates the plan period dummy variable.

Table 2

Estimates of Ω (coefficient on plan period dummy τ_{it}) using liquidity as dependent variable (Equations 6.1 and 6.2)

(t/z-statistics in parenthesis; * denotes significance at 10% level, ** at 5% level)

	$\tau_{it} \equiv 1$ between plan <i>announce</i> date and plan end-date; 0 otherwise	$\tau_{it} \equiv 1$ between plan <i>start</i> date and plan end date; 0 otherwise
Normalized trade volume (random effects) (Eq. 6.1)	-.0523909 (-3.50)**	-.0219688 (-1.47)
Normalized trade volume, controlling for market (random effects) (Eq. 6.2)	-.0377779 (-2.53)**	-.0061587 (-0.41)
Normalized trade volume (fixed effects) (Eq. 6.1W)	-.0833886 (-5.04)**	-.0326349 (-1.69)*
Normalized trade volume, controlling for market (fixed effects) (Eq. 6.2W) ⁹⁰	-.0605119 (-3.59)**	-.009401 (-0.48)
Normalized trade volume (Tobit ⁹¹) (Eq. 6.1A)	-.1140045 (-3.14)**	-.1213623 (-3.56)**
Normalized trade volume, controlling for market (Tobit) (Eq. 6.2A)	-.1193589 (-3.82)**	-.103338 (-3.20)**

The results here are fairly straightforward: a stock's liquidity is significantly reduced during the period between the announcement of a 10b5-1 plan and its termination, whether or not the market's liquidity is controlled for. The fact that the results are not statistically significant for plan periods defined by plan-specified start date suggests the same conclusion discussed above with respect to returns: that the trading public considers the announcement of a 10b5-1 plan, rather than its start date, to be of primary significance. However, the explanation here cannot simply be that outsiders are following the insider's sell signal, because this should not decrease the

⁹⁰ T-statistics for Equations 6.1W and 6.2 W are calculated using White standard errors. See *supra* note 83.

⁹¹ Because the Tobit model is non-linear, interpreting the Tobit coefficient is far from straightforward. The direction and statistical significance, however, have exactly the same as in the OLS linear model. See WOOLDRIDGE, *supra* note 44, at 567.

trade volume. Instead, a more likely explanation is that the reduction in buy orders offsets the increase in sell orders (including the insider's own sale orders), which would occur if current stockholders consider the plan a signal to sell to less of an extent than prospective buyers consider the plan a signal to *not* to buy.⁹²

Table 3

Estimates of Ω (coefficient on plan period dummy τ_{it}) using return volatility as dependent variable (Equations 7.1-7.8)
(t/z-statistics in parenthesis; * denotes significance at 10% level, ** at 5% level)

	$\tau_{it} \equiv 1$ between plan <i>announce</i> date and end-date; 0 otherwise	$\tau_{it} \equiv 1$ between plan <i>start</i> date and plan end date; 0 otherwise
Absolute value of abnormal returns for given stock and plan dummy τ_{it} (Eq. 7.1)	-.0009408 (-1.73)*	-.0008636 (-1.60) ⁹³
Square of residual returns for given stock and plan dummy τ_{it} , controlling for fixed effects (Eq. 7.2)	-.0004013 (-0.63)	-.0003077 (-0.50)
Absolute value of residual returns for given stock and plan dummy τ_{it} (Eq. 7.3)	-.00309 (-7.98)**	-.0024776 (-6.61)**
Absolute value of residual returns for given stock and plan dummy τ_{it} , controlling for fixed effects (Eq. 7.4)	-.0030135 (-7.73)**	-.0023964 (-6.36)**
Square of CAPM abnormal returns (Eq. 7.5, calculated from Eq. 3)	-.0008934 (-1.64) ⁹⁴	-.0008178 (-1.52)
Square of CAPM abnormal returns, controlling for fixed effects (Eq. 7.6, calculated from Eq. 3)	-.0003547 (-0.56)	-.0002675 (-0.44)
Absolute value of CAPM abnormal returns (Eq. 7.7, calculated from Eq. 3)	-.0023905 (-6.30)**	-.0018421 (-5.01)**
Absolute value of CAPM abnormal returns, controlling for fixed effects (Eq. 7.8, calculated from Eq. 3)	-.0023178 (-6.07)**	-.0017671 (-4.79)**

⁹² See *infra* Part VII (discussing why this might be the case).

⁹³ This result is only marginally insignificant – the p-statistic is .109.

⁹⁴ This result is only marginally insignificant – the p-statistic is .101.

Unlike the results involving returns and liquidity, the results here are only significant in the *opposite* direction expected. It is also worth noting that only the per-day measures corresponding to pooled standard deviation, as opposed to variance, are significant. Because variance will give greater weight to more extreme values, this result could suggest that some highly volatile stocks are systematically behaving differently – i.e. their volatility is actually increasing during plan periods. Or it could simply be due the absolute value functional forms are more properly specified (which is why standard deviation is the more commonly accepted measure of risk).

Regardless of why the variance measures might be insignificant, the results do not support the hypothesis that 10b5-1 plan periods result in increased return volatility. As noted above, however, return volatility is the “least reliable” of the common proxies for asymmetric information.⁹⁵ The primary significance of return volatility for present purposes would be as evidence of one of the unambiguously negative effects of insider trading: that insiders would actually cause price swings in their own firms, either by harming their firms or by manipulating the timing of information releases.⁹⁶ Thus the finding that 10b5-1 plans do not increase return volatility (based on the significant *negative* coefficients) is inconsistent with the hypothesis that insiders will cause greater return volatility in their own firms, even if they are trading on the basis of material nonpublic information using 10b5-1 plans.

⁹⁵ See note 56 above.

⁹⁶ See *supra* Part III; POSNER, *supra* note 49, at 433–34.

VII. CONCLUSION

The results discussed above suggest the following general conclusions: (1) that the trading public attaches primary significance to the announcement of a 10b5-1 plan rather than the specified start date of that plan; (2) that insiders make above-market profits using 10b5-1 plans, but do not arbitrarily or continually create such plans; (3) that 10b5-1 plans have a significant negative effect on the liquidity of a firm's shares, and therefore the firm's cost of capital; (4) that insiders do not increase the volatility of their own firms' shares in order to profit by trading on the basis of material nonpublic information under the protection of the 10b5-1 safe harbor.

At this point it may be worth noting an additional fact that I observed while creating the dataset but did not expressly code: that those who create 10b5-1 plans to sell are almost always CEOs of what appear to be small to medium public corporations, who continue to own a relatively large fraction of the outstanding shares even after the execution of their 10b5-1 plans.⁹⁷ Some of these insiders might be founders who took the firm public and are attempting to diversify their assets – diversification, at least, was almost universally the reason given in the press releases for entering into 10b5-1 plans.

Given this observation, the results suggest the following story: that insiders are effectively using 10b5-1 plans as options to execute sales that they expect to execute anyway, but may want to cancel on the basis of material nonpublic information.⁹⁸ This also explains the lack of increase in return volatility during plan periods: insiders who

⁹⁷ For an illustration, the reader is invited to pick a ticker symbol or two at random from Appendix II, below, and perform a LEXIS Business Wire search for "10b5-1" and that ticker. *Cf.* note 60 above.

⁹⁸ Thanks to Tom Miles for this conceptual formulation of a 10b5-1 plan as an option.

own significant portions of their own firms will most likely not find it profitable to increase the volatility of their firms' shares, particularly by causing downward swings. Moreover, like traditional options, these 10b5-1 plan options are costly. Since the announcement of a 10b5-1 plans constitutes a signal to the trading public to sell, and also decreases the stock's liquidity (and therefore increases the firm's cost of capital), insiders as owners bear a significant cost when they publicly announce their 10b5-1 plans.⁹⁹

Nonetheless, an insider bears only a fraction of the costs associated with this 10b5-1 "option" to sell; the firm bears the rest. Therefore, to the extent that legislators and regulators believe that insider trading has net negative social effects, the results of this study suggest that 10b5-1 plans allow the same types of harms, which will be greater in inverse proportion to the insider's equity ownership of the firm. Accordingly, given the law's general prohibition on insider trading,¹⁰⁰ and the stated purpose of Rule 10b5-1 as a safe harbor rather than a tool for evasion,¹⁰¹ the results of this study suggest that the SEC should seek to close the loophole created by its unwillingness or inability to take action against insider who cancel what are supposed to be "irrevocable" 10b5-1 plans.

One way to do this would be to amend the Rule 10b5-1 safe harbor to require that all 10b5-1 plans be filed with the SEC. Even if the SEC staff is correct in

⁹⁹ As discussed above in Part III, this 10b5-1 announcement cost is most likely an alternative to the costs associated with *ex post* public disclosure in SEC filings.

¹⁰⁰ As noted above, this study seeks to avoid the normative debate regarding insider trading, adopting the law's view that it is negative. See 521 U.S. 642, 652 (1997).

¹⁰¹ See 10b5-1 Release, *supra* note 11, at 51,727.

interpreting *Blue Chip Stamps*¹⁰² to prevent enforcement actions against those who cancel their 10b5-1 trading plans based on inside information,¹⁰³ the amended rule could provide that anyone who cancelled a 10b5-1 plan would automatically and permanently lose access to the safe harbor. This would not prevent opportunity profits through *one-time* trade cancellations, but it would certainly be more effective than the current “good faith” requirement¹⁰⁴ at preventing insiders from using the Rule 10b5-1 safe harbor to engage in insider trading.

¹⁰² 421 U.S. 723, 727 (1975).

¹⁰³ See *supra* notes 28–30 (noting potential arguments against this interpretation).

¹⁰⁴ 17 C.F.R. § 240.10b5-1(c)(1)(ii).

APPENDIX I: Variable Descriptions and Univariate Statistics

Variable	Variable Name	Variable Description	Obs.	Mean	Std. Dev.	Min	Max
V_{it}	<i>volume</i>	Stock's Daily Trade Volume	40721	800553.5	2528873	0	1.9E+08
P_{it}	<i>price</i>	Stock's Daily Closing Price	40721	18.4154	14.86	0.26	94.5
P_{Mt}	<i>nasdaqprice</i>	NASDAQ's Daily Closing Index Price	40721	2053.688	116.43	1752.49	2331.36
V_{Mt}	<i>nasdaqvolume</i>	NASDAQ's Daily Trade Volume	40721	1.76E+09	3.1E+08	6.35E+08	2.69E+09
τ_{it}	<i>anntoend</i>	1 if between plan announcement date and plan end date; 0 otherwise	40721	0.420471	0.493	0	1
τ_{it}	<i>starttoend</i>	1 if between plan start date and plan end date; 0 otherwise	40721	0.4189239	0.4933	0	1
r_{it}	<i>return</i>	Stock's Daily Return	40640	0.0009657	0.0384	-0.507	3.125
r_M	<i>nasdaqreturn</i>	NASDAQ's Daily Return	40640	0.0003166	0.0093	-0.0252	0.0302
σ_{it}	<i>var</i>	Daily Price Volatility	40640	0.019415	0.0316	0	3.119
ε_{it}	<i>abreturn</i>	Daily Abnormal Returns	40640	0	0.0371	-0.5084	3.119
V_i	<i>predvol</i>	Average Trade Volume for a Given Firm	40721	800553.5	1542597	12472.9	1.09E+07
V_{it}/V_i	<i>normalvol</i>	Normalized Daily Trade Volume	40721	1	1.49095	0	63.960
V_M	<i>prednasdaqvol</i>	Average NASDAQ Trade Volume	40721	1.76E+09	0	1.76E+09	1.76E+09
V_{Mt}/V_M	<i>normalnasdaqvol</i>	Normalized Daily NASDAQ Trade Volume	40721	1	0.17177	0.361	1.526

APPENDIX II: Firm Statistics

Firm Ticker	Plan Announcement Date	Plan Start Date	Plan End Date	Est. β
ADCT	11-Jan-06	31-Mar-06	31-Dec-06	1.368
AKAM	28-Nov-05	6-Dec-05	8-Jun-06	1.790
AMIS	23-Aug-04	4-Oct-04	31-Dec-05	1.187
ANCC	30-Nov-04		18-Nov-06	0.567
ATYT	14-Oct-04			1.367
AWBC	1-Mar-04			0.909
BANR	19-Jul-05	1-Aug-05		1.029
BCON	30-Dec-05			0.788
BEBE	19-Feb-04			1.173
BKRS	29-Jun-05			0.039
BNK	21-Sep-04			0.463
CENT	28-May-04	28-May-05		0.685
CHKP	21-Apr-05			1.400
CNET	30-Nov-04	1-Feb-05		1.852
CNXS	27-Oct-05	6-Jul-05	5-Jul-07	0.497
CONN	3-Sep-04	1-Oct-04	30-Sep-05	0.537
CRUS	1-Jun-04	30-Jun-04		1.908
CTBK	15-Nov-05			0.903
CITY	27-Jan-06			0.915
CULS	28-Feb-05	1-Mar-05	25-Feb-06	0.686
DECK	20-Aug-04	1-Oct-04	30-Jun-06	0.804
DRCT	8-Jun-04	22-Jun-04		0.525
DTAS	1-Feb-05	1-Feb-04	31-Jan-05	1.066
ELON	23-Aug-04			1.668
EMBT	21-May-04	31-May-04	11-Aug-04	1.331
EZM	16-Jun-04	1-Jun-04	30-Jun-06	-0.965
FCBC	30-Nov-04	29-Nov-04		1.244
FTHR	12-May-05			0.458
GILD	17-Aug-04	29-Apr-05		1.147
GPIC	12-Jan-05	29-Dec-04		0.554
HBIO	9-Jun-04		31-Jul-05	0.702
HLEX	28-May-04			0.975
IDCC	7-May-04		31-Dec-04	1.497
IINT	11-Mar-05		1-Jun-05	0.422
INPC	7-Sep-05	7-Sep-05	5-Oct-05	0.915
ISON	20-Oct-05			1.073

ITRA	20-Feb-04		30-Apr-05	0.256
ITRI	26-Sep-05	1-Oct-05	31-Dec-06	0.884
IVGN	16-May-05		20-May-05	0.925
LEND	1-Jul-04	1-Jul-04	5-May-05	1.048
LINK	21-Jan-05	21-Jan-05	1-Feb-07	0.731
LNDC	2-May-05		10-Dec-06	0.323
LWSN	20-Oct-04	20-Jan-04	30-Nov-04	1.120
MFLO	11-Mar-04			0.386
MGLN	16-Jun-05	16-Jun-05		0.443
MIDD	14-Jun-05			0.690
MOLX	28-Oct-05	1-Mar-05	31-Dec-06	1.085
MTLG	2-Mar-05			1.663
NMHC	15-Jun-04			0.750
NTLI	1-Jun-04		1-Jun-06	0.483
NXTP	27-Feb-04		30-May-05	0.735
OPMR	8-Aug-05			0.481
PDX	19-Feb-04	1-Jan-04	19-Feb-04	0.644
PLAB	12-Jan-06	16-Jan-06		1.791
PRFT	11-Jan-06		31-Dec-06	0.666
PRTL	11-Mar-05		11-Sep-06	1.219
PSSI	2-Nov-05			1.140
PSTI	25-May-05		29-May-06	0.784
PTEK	16-Jun-04	1-Jul-04	31-Dec-05	-0.448
PZZA	27-May-04		30-Jun-05	0.651
RDEN	16-Mar-04			0.802
RHAT	27-Dec-05			1.681
RTWI	30-Aug-04	30-Aug-04		0.235
SCHL	20-Jan-04			0.730
SCST	6-May-04	1-Jul-04	30-Apr-05	1.324
SEBL	1-Feb-05	1-May-05	1-Nov-05	1.375
SERO	16-Mar-04		30-Jun-06	0.843
SHFL	2-Mar-04			1.111
SMTL	1-Jul-05	1-Jul-05	1-Feb-05	1.876
SPIR	16-Sep-05	19-Jul-05	19-Jul-06	0.707
STNR	1-Jun-05	2-Jun-05	31-May-06	0.270
TALX	3-Jun-05	15-Jun-05	15-Dec-05	0.846
TUNE	3-Dec-04	1-Mar-05	31-Dec-07	1.669
UB	14-May-04	1-Jul-04	31-Nov-05	0.462
UCBH	18-Nov-04		30-Apr-05	0.868
ULBI	14-Dec-04	9-Jan-05		1.082
VECO	28-Jul-04			1.719

VIRL	26-Feb-04	10-Dec-04	1.203
WSTL	10-Jun-05	15-Jun-05	1.503
XOMA	8-Aug-05		1.093
ZILA	13-Dec-05		0.920