DOES SECTION 16b DETER
INSIDER TRADING BY
TARGET MANAGERS?

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Does Section 16b deter insider trading by target managers?

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Abstract

This paper examines empirically whether the short-swing rule (Section 16b of the Securities Exchange Act) deters managers from trading before mergers. Since a merger forces the sale of the target's outstanding equity, insider purchases within six months before the merger cannot escape this rule. We examine the 1941-61 period when no other insider trading laws were enforced. Consistent with 16b's deterrent effect, managers' purchases drop significantly before the announcement. Before completion, the decrease occurs only in the 1941-55 period. Surprisingly, pre-announcement sales do not decline, even though 16b cannot punish deferral of planned sales.

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JEL Classification: G34; G38; K22

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1. Introduction

Since 1934, Section 16a of the Securities Exchange Act of 1934 has required officers, directors, and owners of more than 10% of the common stock of a firm to report their trades to the Securities and Exchange Commission (SEC). Each month, the SEC publishes these trades in the *Official Summary of Security Transactions and Holdings*. Many researchers have used this publication to analyze insider trading. Their research has unanimously concluded that on average, insiders earn positive excess returns from their trades [see, e.g., Jaffe (1974a,b), Seyhun (1986), and Rozeff and Zaman (1988)].

In recent decades, the main focus of the SEC's efforts to deter insider trading has been Rule 10b-5, which makes trading on a nonpublic "material fact" (i.e., information important to a reasonable investor) illegal and applies to individuals who have a duty not to disclose the information. Though it was adopted by the SEC in 1942, Rule 10b-5 was not enforced on stock exchange transactions until the Cady, Roberts decision in 1961 [see, e.g., Columbia Law Review (1962), Hines (1963), and Manne (1966)]. After 1961, Rule 10b-5 became the main way to deter trading based on special information. A number of court cases in the ensuing decades have strengthened insider trading regulation.[1] Furthermore, the Insider Trading Sanctions Act of 1984 (ITSA) and the Insider Trading and Securities Fraud Enforcement Act of 1988 (ITSFEA) have increased penalties for insider trading.

The effectiveness of these regulations has been tested by examining changes in insider trading following regulation changes. For example, Jaffe (1974b) finds that profits to insiders did not fall following the Cady, Roberts decision, the Texas Gulf Sulphur indictment, and the Texas Gulf Sulphur decision. Seyhun (1992) concludes that abnormal returns to insiders actually increased after the passage of ITSA. However, he finds that insider trading prior to earnings and takeover announcements diminished after ITSA.

We are unaware of any empirical study that examines the consequences of the short-swing rule (Section 16b of the Securities Exchange Act). A short-swing trade is defined as

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[1]For example, see U.S. Supreme Court (1969, 1980).

a purchase and a subsequent sale (or a sale followed by a purchase) within a six-month period. Section 16b requires insiders to return all profits from such trades to the corporation. In effect since 1934, this is a simple rule intended to stop the most obvious types of insider trading abuses. It is relatively easy to enforce, because there is no requirement for proof that a trade was based on inside information. Its enforcement does not tie up SEC resources, since action can be brought by any shareholder. However, a shareholder lacks incentives to bring a lawsuit because of a free-rider problem: He incurs 100% of the costs of the lawsuit, but if he wins, the insider returns the illegal trading profits to the company. Therefore, Section 16b is typically enforced by lawyers, who continuously monitor the *Official Summary*. If, upon notification, an insider does not comply with the law, a lawyer need only purchase one share of the company to become a shareholder and file a suit. The lawyer receives legal fees out of the trading profits that the insider returns to the company. This rule is attractive, because it uses free market forces, rather than large amounts of public expenditures, for enforcement.

Nevertheless, Section 16b is unlikely to reduce insider trading for two reasons. First, trades will be challenged by lawyers only when the anticipated compensation exceeds the value of their time and effort. Trades with profits below a certain threshold could escape challenge. Second, and more important, the rule is unlikely to prevent insider trading before announcements of most corporate events. Insiders can sell the stock six months and a day after buying and thus avoid violating the rule. This "loophole" may be the reason academics have not attempted empirical studies of Section 16b.[2]

However, few people know that this loophole does not exist for one important corporate event, viz. mergers. A merger forces the sale of all the outstanding common stock of the target firm. Thus, a target firm insider who purchased stock within six months before the merger date is caught by the short-swing rule. Case law has established that the rule

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[2]For instance, Jennings and Marsh (1987) say, "...any moderately bright manipulator should be able...to string out his activities and thus escape any penalty." Indeed, Section 16b is viewed by some as redundant, given the more potent Rule 10b-5 [see, e.g., Lowenfels (1968, p. 64) and O'Connor (1989)].

applies to stock-for-stock, as well as cash-for-stock, mergers.[3] Furthermore, arguments that the insider was forced to sell involuntarily, or even that the insider voted *against* the merger, appear to have legal standing under only the most exceptional circumstances.[4]

That Section 16b might reduce insider trading prior to mergers is particularly interesting for a number of reasons. First, mergers are known to have a large impact on the stock prices of target firms [see Jensen and Ruback (1983) and Jarrell, Brickley and Netter (1988) for recent reviews]. Second, many recent cases of insider trading fraud involved knowledge of an impending takeover. [For example, 79% of Meulbroek's (1992) sample of illegal insider trading involves corporate control transactions.] Third, one common criticism of government is that regulation has unexpected effects. Section 16b may be an example of this "law of unintended consequences," since its effect on trading before mergers does not appear to have been anticipated.[5] Accordingly, this paper examines empirically the trades of target managers before mergers.

In addition to Section 16b, insider trading is currently affected by three regulations: Rule 10b-5, ITSA, and ITSFEA. Case law in the 1980s may also have had a strong effect. Seyhun (1992, p. 151) states, "Case law in effect defined illegal trading as trading immediately prior to takeovers and earnings announcements and other important corporate announcements." Overall, these regulations and case law seem to have been quite effective in deterring insider trading before mergers. For example, Seyhun (1992, p. 175) writes, "Top executives almost completely stopped trading before takeovers" over the period from April 1980 to December 1989.

In order to disentangle the effect of Section 16b from these other regulatory efforts, it is important to examine a time period when only 16b was operative. Since the first of

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[3]For example, see U.S. Supreme Court (1973). Even this landmark case does not question the application of the short swing rule to stock-for-stock mergers.

[4]See U.S. Supreme Court (1973).

[5]For example, Haddock and Macey (1987) say, "Because the reach of 16(b) can be avoided by holding securities for longer than six months, even the drafters [of the law] anticipated little effect in curbing insider trading."

these regulations, Rule 10b-5, was not enforced prior to the Cady, Roberts decision in November 1961, we examine mergers completed over the period from January 1941 to October 1961.[6] Although we study this early time period, our findings have important implications for the current policy on insider trading. Section 16b continues to be enforced and still applies to mergers, and mergers and acquisitions continue to be a major focus of the regulatory effort against insider trading. Unlike other regulations, 16b is attractive because it is relatively inexpensive to enforce. Therefore, knowledge of its effects gives us a base case for understanding the incremental effects of later, more costly regulations.

The paper is organized as follows. Previous studies are reviewed in section 2. Section 3 discusses the different implications of Section 16b for managers' purchases and sales. The data are described in section 4. Results are presented in the next section. Conclusions are provided in section 6.

2. Prior studies

While no prior study has examined the effect of Section 16b on the insider trading preceding mergers, a number of studies have investigated insider trading before corporate events. We interpret the majority of these as suggesting that insiders do not profitably time their trades before events.[7] In addition, there are two studies with conflicting results for dividend initiations.[8] Finally, we found two papers presenting strong evidence that insiders trade profitably before corporate events.[9]

Taken together, these studies do not indicate that insiders profitably time their trades

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[6]While Rule 10b-5 was not enforced during this period, there is plenty of evidence that Section 16b *was* enforced. See, e.g., Lowenfels (1968).

[7]See, e.g., Elliott, Morse, and Richardson (1984) and Givoly and Palmon (1985) for various corporate news, Loderer and Sheehan (1989) for bankruptcy, and Seyhun (1990) for acquisitions. However, Seyhun looks at acquiring firms while this paper examines target firms.

[8]See John and Lang (1991) and Ku and Westerfield (1992).

[9]See Karpoff and Lee (1991) for security offerings, and Penman (1982) for managers' earnings forecasts.

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prior to corporate events. Because all of the studies use data after the Cady, Roberts decision in 1961, the results are consistent with the hypothesis that Rule 10b-5, or later regulations [ITSA, ITSFEA and case laws - see Seyhun (1992)], deter profitable trading. However, since the authors did not view their works as examinations of these regulations, they did not include precise tests of the regulations. For example, we argue in the next section that regulation should affect purchases and sales differently. For the most part, the studies cited above did not separate purchases from sales.

3. Implications of Section 16b for purchases vs. sales

Many studies on the insider trading preceding corporate events measure only net insider purchases, i.e., the difference between purchases and sales. This approach loses information, since regulation is likely to affect managers' purchases differently from their sales.

3.1. Purchases

In this section, we discuss the effect of Section 16b on purchases.

3.1.1. Purchases before the announcement

In a world with no insider trading regulation, managers who receive private good news about their firm should increase their purchases and decrease their sales. For most information, this was the case for 1934 to 1961, when Rule 10b-5 was not operative and a manager could avoid Section 16b by holding the stock for more than six months.

However, managers who knew of their firm's possible takeover might not have had an incentive to buy even during the 1934-61 period. Consider an example in which the firm's stock is selling at $45, reflecting the market's assessment that there is a 25% probability of its being acquired at $60, and a 75% probability of the stock falling to $40 if it is not acquired. Suppose a manager knows of an imminent merger announcement that would increase the acquisition probability to 75%. This announcement should raise the stock price to $55. However, if the acquisition is likely to occur within six months, the manager who purchases before the announcement is, in effect, providing a call option to the firm.

If the merger goes through, Section 16b causes the manager to forfeit all profits from the acquisition. Conversely, if the acquisition falls through and the price drops to $40, the manager is, of course, not reimbursed for his losses. Thus, Section 16b essentially eliminates the manager's incentive to exploit his private information by purchasing the stock before the merger announcement.

Obviously, the situation described above is stylized. For example, the argument does not hold if managers know of an acquisition more than six months in advance. Similarly, if the market had no advance knowledge of the merger possibility, the price should not drop after an acquisition falls through.

The important point is that insider purchases may either rise or fall prior to merger announcements. On the one hand, if Section 16b does not have a deterrent effect, managers should increase their purchases relative to their normal level. On the other hand, in the above example, which has effective regulation, managers' buying should completely dry up before a merger announcement. (The manager in the example who chooses not to purchase, possesses special information. However, a manager without special information, i.e., one who assesses the probability of acquisition at 25%, would also choose not to purchase.) Under less extreme conditions, managerial purchases before mergers may still fall below their normal levels. Thus, the effect of Section 16b on insider buying prior to mergers is an empirical issue.

3.1.2. Purchases between announcement and completion

This situation is somewhat different. First, consider a world without effective regulation. In the extreme case where the announcement guarantees completion, no abnormal returns would be expected to follow the announcement. Thus, managers would have no incentive to buy. In other cases in which, after the announcement, a manager believes consummation of the merger is more (less) likely than does the market, he has an incentive to increase (decrease) purchases. For a sample of merger attempts, the effects of these two possibilities on purchases would be offsetting. But because our sample consists of completed mergers, managers are perhaps more optimistic about completion than is the market. However, this asymmetry is likely to be smaller than the asymmetry before the

announcement. Therefore, if managers ignore 16b, while purchases may increase during this period as well, the increase should not be as large as before the announcement.

Second, while effective regulation should reduce managers' purchases after the announcement, it is unclear whether this reduction is greater than that before the announcement. On the one hand, 16b violations are more likely to occur on purchases during this period than before the announcement, because this period is closer to merger completion, which forces sale of the stock. On the other hand, these purchases are less profitable, because the stock has already risen at the announcement. Therefore, potential 16b violations stemming from these purchases are less likely to be challenged by lawyers whose fees must be paid out of the insider trading profits.

3.2. Sales

In this section, we discuss the effect of Section 16b on sales.

3.2.1. Sales before the announcement

The story is quite different with sales. Consider a risk-neutral manager who bought the stock over six months ago and is considering selling it in the near future. In our stylized example, he could sell his stock at the current price of $45, or wait and sell it for $55 after the announcement. Clearly, the manager should defer the sale until after the announcement, because Section 16b can not punish such deferrals. This implies that sales should decrease before the announcement.

3.2.2. Sales between announcement and completion

Analogous to the argument on purchases in section 3.1.2, the deferral of planned sales until after the announcement depends on the degree of information asymmetry between managers and the market. For example, if managers are sure that the merger will go through but the market is not, managers will continue to defer planned sales. Alternatively, in the extreme case where the announcement guarantees completion, the abnormal returns after the announcement would have a zero expectation. In this case, the manager would not benefit by continuing to defer the sale once the announcement is made.

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In fact, if planned sales were indeed postponed from the pre-announcement period, they may take place now, causing sales to go up.

4. Sample and data

This paper examines the premerger trading by top managers of acquired firms prior to the 1961 Cady, Roberts decision.

4.1. The merger sample

We chose the 1941-61 period because it was a relatively pure regulatory era during which Section 16b was the only rule enforced against insider trading, at least for securities traded on stock exchanges. The reasoning for the choice of the sample period is as follows: The SEC was created in 1934 and therefore the *Official Summary*, which reports insiders' trades, was not published before then. As we discuss later in this section, we need five years of insider trading data before the merger announcement. Thus, 1939 is the earliest possible beginning year for our sample. There were very few mergers in 1939 and 1940, and none of them met our data requirements, so our sample begins with mergers occurring in 1941. The acquisition of the last firm in the sample was completed before the Cady, Roberts decision in November 1961. The merger completion month was defined as the month in which a firm disappears from the CRSP tapes.

We obtained the sample of mergers by a two-step process. First, we compiled a list of all New York Stock Exchange (NYSE) firms that were delisted from the monthly files of the Center for Research in Security Prices (CRSP) due to a merger or reorganization over the period from 1941 to 1961. Second, we determined the announcement date of the merger using the Wall Street Journal Index (WSJI) for mergers that occurred in 1956 or later (The WSJI was not published prior to 1956.), and the New York Times Index (NYTI) for mergers that occurred prior to 1956. The announcement date is defined as the date of the first public announcement about the acquisition of a target firm by either the target or

a bidder.[10] Table 1 shows a time profile of our sample of merger targets. About 14% of the mergers in our sample took place in the decade of the 1940s, 72% in the 1950s, and 14% in the early 1960s.

4.2. Institutional setting of mergers in the sample period

Our sample period includes the mini merger wave of 1943-56 (Nelson, 1959). Some of the mergers in the early part of this wave were vertical, to avoid price controls and allocations during World War II (Stigler, 1951). Other mergers were motivated by the low capital gains tax at the time (Butters, Lintner, and Cary, 1951). Unlike the merger wave of 1975-89 that resulted in core consolidations, this mini-wave was not specific to a set of industries, except for electrical equipment (Post, 1994). Following the Celler-Kefauver Act of 1950, mergers became increasingly conglomerate, being driven in part by product or market extension.

The last two decades have been characterized by enormous variety in the market for corporate control [see Jensen and Ruback (1983) and Jarrell, Brickley, and Netter (1988)]. Acquisitions now vary in form (mergers, tender offers, proxy contests), method of payment (cash, equity, preferred stock, notes), competition among bidders, and target management's reaction to the bid (hostile, friendly, or white-knight takeovers). There has also been substantial growth in takeover defenses such as antitakeover amendments, poison pills, creation of dual classes of common stock, and defensive restructuring. In contrast, in our sample period, the corporate control market seems to have been fairly homogeneous. For example, only two of the 132 mergers in our sample were preceded by a tender offer. Most of the mergers were financed by equity swap, supplemented in some cases by preferred stock. Similarly, in most cases, there was only a single bidder. The transactions tended to be friendly, negotiated deals, making it more likely that target managers had special information before the merger announcement, as opposed to hostile tender offers where they were caught by surprise. Despite the greater variety in today's market for corporate

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[10]The sample of firms acquired in mergers during 1955 to 1961 was kindly provided by Prof. Robert Harris. We collected the sample for 1941 to 1954, using the same procedure.

control, most acquisitions are still friendly, negotiated transactions [see Jensen (1988, p. 22)]. Therefore, our analysis is quite relevant for today's situation.

4.3. Insider trading data

For each acquired firm, we obtained data on open market trades of top managers from the *Official Summary* from 60 months before the announcement month to the month of merger completion; we also checked for late reports for six months after the merger completion. We focus on top managers, defined as officer-directors, because the merger of a firm involves major decisions that are usually restricted to top executives. This approach follows Seyhun (1990, p. 443) who says, "... lower-level executives or the large shareholders (many of whom are firms) may not be aware of top management's attitude toward the potential acquisition. Restricting the sample to top management also focuses on a relatively homogeneous group. For instance, the large shareholders usually trade larger volumes of stock (by an order of magnitude) than the executives, much of which is for noninformation-related reasons (Seyhun 1986). Hence, if all transactions are pooled together, large shareholders' transactions would dominate the top executives' transactions, and the pooled transactions would contain less information."

For each month, we determined the number of managers who bought, the number of shares they bought, the number of managers who sold, and the number of shares they sold. In the rare case where a single manager both buys and sells in the same month, we classify him as a buyer (seller) if the number of shares purchased is greater (less) than the number of shares sold. We classified relatives of a manager, as well as trusts for the manager's benefit, as one person. We ignored exercises of stock options. We also ignored trades that the *Official Summary* indicated were executed at nonmarket prices (private sales).

We first compare the trading activity of target managers prior to merger announcements with two sets of controls: a time-series control and a cross-sectional control. We view the year before the merger announcement (i.e., months (-12,-1), where zero is the announcement month) as a period of possibly informed trading by managers. For the time-series control, we use the trading activity of target managers in months (-60,-13). For the

cross-sectional control, we match each acquired firm in our sample with a nonacquired control firm on the basis of industry and size. (The control firm has a market value of equity closest to that of the acquired firm one year before the merger announcement, determined by comparing all NYSE firms with the same two-digit SIC industry code as the acquired firm.) Data on insider trading for each control firm are collected over the same time interval as its matched acquired firm. Next, we use the same approach to compare the trading activity of target managers prior to the merger completion month with the two sets of controls.

Table 2 presents the frequency distribution of the number of managers trading in a month for both the target and the control firms. Trading is relatively infrequent; out of the sample of 8,653 company-months for targets, managers bought in only 414 company-months, giving an average frequency of once in about 20.9 months. Sales are even less frequent. In months with trades, the trading is usually done by a single individual. Trading frequency is similarly low in the control sample of nontargets.

5. Results

In this section, we examine both the stock price reaction to the merger announcement and the trades of top managers around the months of announcement and completion.

5.1. Stock price reaction

Prior studies find that the announcement of a merger substantially increases the stock price of the acquired firm [see Jensen and Ruback (1983) and Jarrell, Brickley, and Netter (1988) for reviews of this literature]. However, these studies generally do not cover our sample period. To examine whether mergers had similar effects on acquired firms during our time period, we calculate the abnormal performance of firms in our sample around the time of the merger announcement. Furthermore, since our time-series control for insider trading begins five years before the merger announcement, we also examine the stock price performance over that five year period.

We measure abnormal performance after adjusting for both firm size and beta risk as in Agrawal, Jaffe, and Mandelker (1992), since their results indicate that an adjustment

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for the size effect is important when measuring long-run performance around merger events. The results are presented in table 3. Abnormal returns are essentially zero over months (-60, -13) relative to the merger announcement. Target firms experience a large and statistically significant abnormal return of 11.75% over months (-3, 0). While the magnitude of this return is lower than that experienced by targets in recent decades [see Jensen and Ruback (1983, pp. 11-13)], it is closer to the findings of Mandelker (1974, table 2), who examines a sample period similar to ours. [Mandelker finds an abnormal return of 15% over the eight month period leading up to the month of merger completion, based on the market model. We find a significant abnormal return of 15.1% (not shown in table 3) over months (-3, C), where months zero and C are the months of announcement and completion, respectively, using size and beta-adjustment.] Higher abnormal performance in more recent decades may follow from either higher premiums or a greater probability of success, among other reasons. Performance rises from the announcement month to the month of completion, as the probability of the success of the bid increases to one.

As a check on these results, table 3 also presents the abnormal performance for our control group of industry-size-matched nontarget firms around the time of the merger event. These results show essentially random performance throughout the time periods examined. This is not surprising, since our control group is matched using the 2-digit SIC classification, which is broad enough so that the announcement of the merger is likely to have little or no effect on the control firms.

We draw three conclusions from table 3. First, the announcement of a merger has a large and statistically significant effect on the stock price of the acquired firm. This suggests that, in the absence of effective regulation of insider trading, managers have an incentive to increase their purchases and decrease their sales prior to the announcement. Second, abnormal performance is essentially flat in months (-60, -13). This suggests that the level of insider trading activity in months (-12,-1) can be meaningfully compared to its level in the control period of months (-60, -13), as we do in our time-series control. Third, the control firms display no abnormal performance during any time period. This suggests that insider trading activity for the acquired firms can be meaningfully compared to the activity in the control firms, as we do in our cross-sectional control.

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5.2. Purchases in the overall sample period

Based on the discussion in section 3, we examine purchases and sales separately. Table 4 reports the average measures for purchases by managers. For each firm in each month, we measure purchases in four ways: the number of managers purchasing, the number of shares purchased, the dollar value of purchases, and the percentage of the outstanding equity purchased.

First, we examine the purchases of top managers relative to the month of merger announcement. Next, we look at purchases relative to the month of completion.

5.2.1. Purchases before the announcement

An examination of purchases relative to the announcement is interesting, since our discussion in section 3 indicates two possibilities. If Section 16b has no deterrent effect, top managers should increase their purchases prior to the merger announcement. If Section 16b does have a deterrent effect, purchases should not increase prior to the announcement; in fact, as we argued, purchases could actually be reduced.

Panel A of table 4 divides into five separate periods the 60-month period prior to the announcement month. For each measure of purchase and for each time interval, the first line presents the average value per month for managers of target firms. The second line shows the average per month for the control group of nontarget firms. The third line presents t_c, the (cross-sectional) t-statistic for the difference between the two samples. The last line in every period except (-60, -13) presents t_t, the test statistic for the time-series control. This statistic compares the purchases of target managers in a given interval with their purchases during months (-60,-13). Both t-statistics are calculated from matched pairs and the normal distribution is assumed. We have also performed non-parametric binomial tests. These results are not reported, since they are similar.

For example, consider the observations that lie in the first three rows of panel A of table 4. These represent the statistics during months (-60,-13) relative to the announcement month. Three of the four t-values are insignificantly negative and one (-1.96) is significant. We believe that, taken together, the results indicate that the purchases of target managers are not significantly different from those of the control firms over months (-60, -13).

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If managers of target firms profit from inside information on mergers, their purchases in year -1 should increase above those of the nontarget firms. However, the results show a significant reduction in purchases for year-1, as evidenced by each of our eight t-values for months (-12,-1). This result is consistent with Section 16b actually lowering managers' purchases below their normal levels.

The rest of panel A in table 4 presents evidence on managers' purchases during three subperiods over year -1. Managers show a significant reduction in purchases during each subperiod. As with months (-12,-1), we view the subperiod results as suggesting that Section 16b has a deterrent effect. However, a reduction in managers' purchases also occurs in months (-12,-7), a period before the six-month rule takes effect.

While the median time between the announcement of a merger and its completion is under three months, there is considerable variation across firms. One-sixth of the sample firms completed the merger within one month of the announcement, while approximately one-seventh of the firms took more than six months. The longest time between announcement and completion was 21 months.

It is generally difficult to know, even ex-post, when target managers first learned about a merger attempt on their firm or when the merger talks were initiated. Sanders and Zdanowicz (1992) find that the initiation date was disclosed ex-post in only 30 of the corporate control transactions (including mergers, tender offers, leveraged buyouts and management buyouts) that took place among NYSE and AMEX firms during the period 1978 to 1986. For this sample, they find (see their Appendix 2, p. 126) that talks began between managers of the two firms an average of about three months before the announcement, with a wide variation across firms in this interval. In our sample, the relevant articles in the Wall Street Journal and the New York Times revealed, ex-post, the initiation date of the merger for only a handful of the targets. Thus, since managers may not know ahead of time the precise date of either the announcement or the completion of the merger, these results suggest that the deterrent effect, given this uncertainty, begins months earlier than it would in a world of perfect certainty.

Alternatively, some target firms may delay the merger completion to allow their managers to escape the six-month window of Section 16b. Under this hypothesis, we might

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expect managers' purchases to fall in months (-6,-1), but rise in months (-12,-7). However, since we observe a fall in both months (-12,-7) and (-6,-1), the evidence does not support this hypothesis.

5.2.2. Purchases before completion

As we discussed in section 3, if Section 16b has a deterrent effect, purchases should decrease prior to completion. However, it is not clear how much they should decrease relative to pre-announcement purchases. If Section 16b has no deterrent effect, managers could still have an incentive to increase purchases between the announcement and completion. However, given the reduction in managers' information advantage at the announcement, this incentive should be lower.

The results relative to the completion month are presented in panel B of table 4. For the intervals (-12, 0), (-6, 0), and (-3, 0), only the t-values for the number of managers buying are significantly negative. The t-values for the other three measures are insignificant. Thus, while this evidence might also suggest that Section 16b has a deterrent effect, the evidence is clearly much weaker here than it is for purchases prior to the announcement.

5.3. Purchases over subperiods

Panel A of table 5 compares the purchases of officer-directors relative to the announcement for mergers that took place in the subperiod 1941-55 with those in the subperiod 1956-61.[11] Over months (-12,-1), t-values are somewhat larger in magnitude for the 1956-61 period than for the 1941-55 period. However, tests for differences of the means (not shown in the table) do not reveal a significant difference over months (-12,-1) between the purchases of managers in target firms (adjusted for either control) during the two subperiods. We also divide the 1941-61 period into other subperiods. We do not find (and do not show in a table) significant differences between the different subperiods in the target managers' pre-announcement purchases relative to either control.

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[11]While these two time periods are of unequal lengths, they contain the same number of mergers.

Panel B of table 5 compares purchases relative to the completion date in the two subperiods. In the first subperiod, purchases decline significantly in the intervals (-6, 0) and (-3, 0) relative to the completion date, findings consistent with Section 16b's deterrent effect. However, in the second subperiod, purchases do not decline significantly prior to completion.

This difference between the two subperiods is not easily explained. One possibility is that managers feared Rule 10b-5 in the early years after the formation of the SEC. However, we found no mention of this viewpoint in our literature search. In fact, Manne (1966) says, "Strangely enough, during the early development of 10b-5 as an insider trading provision, neither the SEC nor the influential commentators saw it as very important." Alternatively, we can hypothesize that Section 16b was ineffective during the period 1956-61. However, we found no support in the literature for this viewpoint, either.

5.4. Purchases in small vs. large firms

Managers in small-capitalization firms may behave differently from those in large firms. Perhaps managers of small firms are better informed of their firms' activities than managers in larger, more bureaucratic companies. In addition, managers in larger firms may be better informed on the technicalities of Section 16b. However, our results relative to both announcement and completion (not shown in a table) indicate no significant differences between the purchases of managers in small vs. large target firms (adjusted for either control).

5.5. Purchases in firms with small vs. large abnormal returns

Finally, we examine whether managers' purchases prior to the merger announcement are related to the stock price reaction to the announcement. Managers may avoid purchases before merger announcements that could result in bigger stock price increases, because such cases are more likely to be pursued by lawyers searching for violations of Section 16b. We subdivide our target sample into two groups, firms whose month zero abnormal return is above/below the sample median. Our results do not reveal significant differences between managers' purchases for the two types of firms and hence are not shown in a table. (We did

not examine whether purchases before the completion are related to the announcement period returns, since most of those purchases occur after the announcement.)

5.6. Sales

In this section, we examine managers' sales around the months of announcement and completion.

5.6.1. Sales before the announcement

Just as a manager can profit by purchasing before an announcement of good news, he can profit by deferring a planned sale until after the announcement. Table 2 shows that individual managers trade infrequently. Thus, an individual who sells in a particular month is unlikely to have purchased the security within the previous six months. Because of this, for the majority of cases, Section 16b could not have prevented managers from deferring sales until after the merger announcement. Therefore, we expect managers' pre-announcement sales to be lower in targets than in control firms.

The results on insider sales are presented in table 6. No t-statistic in the table has an absolute value greater than two. Thus, the table shows no evidence that managers defer sales prior to merger announcements. This is particularly surprising for the months closest to the announcement. If a person has special information about a merger, it is difficult to imagine why he does not merely defer the sale a few days, weeks, or months until the announcement is made and the stock rises. While some managers may be forced to sell for financial emergencies, it is hard to believe that this unlikely possibility adds enough noise to obscure a systematic relationship. The alternative hypothesis, that managers simply have no special information prior to the official announcement of the merger, is unlikely as well, since merger negotiations are often protracted affairs [see Sanders and Zdanowicz (1992) for some evidence of this].

We performed a number of additional tests in an attempt to resolve this issue. Results (not reported in a table), after separating the sample by firm size, calendar time period, price reaction in the announcement month, and time between announcement and completion, reveal no significant patterns. In fact, we find no decrease in sales even in the month immediately before the announcement.

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One possible explanation of this puzzle is that before the announcement, if a manager's assessment of the probability of a merger is greater than the market's assessment, the manager has an incentive not to sell until after the announcement. This is probably the typical situation in our sample of completed mergers. However, the number of deferring sellers prior to any individual announcement is probably low, since few insiders generally plan to sell over any short time interval in the first place (see table 2). Conversely, in the atypical case, in which the manager's probability of completion is lower than the market's, the manager has an incentive to sell immediately. This situation could occur when merger talks break down, even if they later resume unexpectedly. Sales may be much higher in such cases, because a manager's entire holdings could be sold, or many managers in the firm could sell. (This story is not meant to imply that managers systematically make mistakes about the probability of merger completion. For a hypothetical sample of targets of merger *attempts*, we might find that knowledgeable managers sell more often before merger talks that break down and never resume, than before talks that break down but resume later. Our sample consists of targets in completed mergers.) Thus, while there may be more companies in our sample with sales deferrals than initiations, the size of the deferrals may be smaller than the size of the initiations.

One implication of this conjecture is a skewed distribution. For most companies, managers' sales could be lower in the targets than in the control group, but it appears that the largest sales in our sample occur more frequently in the targets than in the control group. However, even when we exclude these large sales, we do not find that sales in the target firms are significantly lower than sales in the control firms. Thus, the evidence does not support this conjecture.

5.6.2. Sales between announcement and completion

Table 6 also presents the sales of top managers during the period from the month of the merger announcement to the month of completion (0, C). Here too, we find no evidence of a reduction in sales. However, this is not surprising. As we discussed in section 3.2.2, the magnitude of sales deferrals after the announcement is positively related to the degree of information asymmetry between managers and other market participants. We find

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that the size and beta-adjusted abnormal returns for target firms are 3.36% from announcement to completion, but 11.75% in the three months leading up to the announcement month. This suggests a reduction in information asymmetry after the announcement.

6. Summary and conclusions

This paper examines empirically whether the short-swing rule (Section 16b) deters managers from trading before mergers. This rule bars insiders from profiting on trades that have holding periods of six months or less. Managers can generally escape the short-swing rule by selling six months and a day after purchase. However, a merger forces a sale of all the outstanding common stock of the target firm, preventing insider purchases made within six months prior to a merger from escaping this rule. We analyze the volume of insider trading in takeover targets before mergers. In order to disentangle the effect of this rule from the deterrent effect of Rule 10b-5, ITSA, ITSFEA, and recent case law, we examine mergers announced between 1941 and 1961, an era when none of these regulations was enforced. While this study examines an early time period, our findings have important implications for the current policy on insider trading. Mergers and acquisitions continue to be a major focus of the regulatory effort against insider trading. Furthermore, Section 16b continues to be enforced and still applies to mergers. Therefore, knowledge of the effect of this rule, which is relatively inexpensive to enforce, helps in understanding the incremental effects of later, more costly regulations.

We argue that if Section 16b does not deter managers from trading on merger news, purchases should rise both before the merger announcement and between the announcement and completion. However, because of the substantial reduction in managers' information advantage at the announcement, their incentive to purchase is lower over the latter period. If Section 16b does have a deterrent effect, managers' purchases should fall both before the announcement and between the announcement and completion. However, the relative magnitude of such reductions is not clear. We find that managers reduce their purchases in the months before merger announcements during the entire sample period of 1941-61, evidence consistent with 16b's deterrent effect. During the 1941-55 subperiod,

purchases are significantly reduced before the completion date as well.

In addition, managers with advance knowledge of a merger announcement clearly have an incentive to defer sales, something that Section 16b cannot deter. However, we find that managers' sales do not fall in the year before the merger announcement. In fact, there is no evidence of a decrease in sales even in the month immediately before the month of the merger announcement. Nor is there evidence of a decrease in sales in firms where the merger announcement generates large, positive abnormal returns. Further, we find that managers do not reduce sales between the announcement and completion of the merger.

A few caveats are in order: First, friends and relatives of managers (other than members of their immediate families), who neither report their trades under Section 16a nor are subject to Section 16b, might increase their purchases before mergers. This increase could offset the reduction in the purchases of managers themselves. Of course, this possibility exists in almost every study of insider trading since, even to this day, friends and relatives of insiders are not required to disclose their trades. Second, our tests assume that managers report their trades to the SEC, as required by the law, an assumption on which we have no evidence. Third, companies sometimes restrict their employees from trading before certain corporate events. Our results could be the outcome of company-specific rules, not Section 16b. However, such company-specific rules may be a more recent phenomenon. Fourth, merger agreements may indemnify managers from shareholder lawsuits, although such agreements are likely to increase, rather than decrease, managers' purchases before merger announcements. Finally, the evidence that insiders do not defer sales until after the merger announcement may suggest that the observed trading behavior could be unrelated to merger information. However, we find that managers significantly reduce their purchases before the announcement and in the first half of our sample period before the completion. Therefore, this explanation does not seem persuasive.

In future research, it would be interesting to examine whether managers trade profitably around major corporate events that do *not* result in a forced sale of stock during this pure regulatory era, since 16b would not apply in such cases.

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Table 1

Distribution of the sample of mergers by the year of announcement.

The sample consists of target firms in 132 mergers between NYSE acquirers and NYSE targets over the period 1941 to 1961. The announcement date is defined as the date of the first public announcement of the merger by either the target or the acquirer.

Year of announcement	Number of targets
1941	1
1942	1
1943	4
1944	2
1945	3
1946	4
1947	1
1948	1
1949	1
1950	4
1951	5
1952	3
1953	10
1954	7
1955	18
1956	12
1957	14
1958	9
1959	13
1960	9
1961	10
	132

Table 2

Distribution of the number of company-months in the sample by the number of top managers of a given firm trading in a month.

The table shows the trades of officer-directors of targets in 132 mergers that took place between 1941 and 1961 between NYSE acquirers and NYSE targets, and a control sample of nonacquired firms matched by size and industry. For each target firm and its control, trades are included for months (-60, C), where months 0 and C are, respectively, the months of announcement and completion of the merger. The total number of company-months in the sample is 8653.

| Number of top managers of a firm trading in a month | Number of company-months | | | |
| | Targets | | Nontargets | |
	Purchases	Sales	Purchases	Sales
0	8239	8307	8039	8179
1	359	319	520	419
2	43	22	83	48
3	5	5	6	6
4	6	0	3	0
5	0	0	1	1
6	1	0	1	0
Total	8653	8653	8653	8653

Table 3

Size and beta-adjusted abnormal stock returns for the samples of target and nontarget firms.

The abnormal return for firm i in month t is computed as in (A1):

$$\epsilon_{it} = R_{it} - R_{st} - (\beta_i - \beta_s)(R_{mt} - R_{ft}),$$

where R_{it} and R_{st} are the stock returns on firm i and its size control portfolio s, respectively, in month t; R_{ft} and R_{mt} are the returns in month t on one-month Treasury bills and the NYSE value-weighted market index, respectively; and β_i and β_s are the betas of firm i and its size control portfolio s, respectively. At the beginning of each year before the merger announcement month, we estimate β_i and β_s using monthly data over the previous 60 months. The samples consist of targets in 132 mergers between NYSE acquirers and NYSE targets over 1941-61 and a control group of nontarget firms matched by size and industry. The t-statistic for the average abnormal return (AAR) and the cumulative average abnormal return (CAAR) is computed according to the crude dependence adjustment method of Brown and Warner (1980, pp. 250-252).

Months around announcement	Targets		Nontargets	
	CAAR (%)	t-stat.	CAAR (%)	t-stat.
(-60, -49)	-3.48	-1.85	-0.00	0.80
(-48, -37)	1.47	0.77	-1.63	-0.58
(-36, -25)	0.85	-0.03	1.25	0.37
(-24, -13)	0.06	-0.23	0.13	0.26
(-12, -1)	5.26	2.68	-0.45	-0.24
(-60, -37)	-2.01	-0.76	-1.64	0.16
(-60, -25)	-1.16	-0.64	-0.39	0.34
(-60, -13)	-1.10	-0.67	-0.26	0.42
(-60, -1)	4.17	0.60	-0.70	0.27
(-1, 0)	9.21	11.65	0.20	0.46
(-2, 0)	10.14	10.08	-0.43	-0.17
(-3, 0)	11.75	9.92	0.37	0.57

Table 4
Top managers' purchases around merger announcements and completions in targets vs. nontargets.

The table shows the average values per month of each of the four measures of purchases by officer-directors for each time interval. The row labeled t_c shows the matched-pairs t-statistic for the cross-sectional difference between the means of the target and control firms. For months (-12,-1) and its subintervals, a similar t-statistic is shown for the time-series control (t_t), for the difference between purchases in a given interval and purchases in months (-60,-13). The sample consists of 132 NYSE firms acquired during 1941-61. Each target firm was matched with a control firm on the NYSE in its 2-digit SIC code industry that had the closest market value of equity as of the end of the year before the merger announcement. The control firm was not acquired for at least 12 months after the completion of the merger of its matched target firm. All dollar values are expressed in thousands of inflation-adjusted 1965 dollars. Month 0 is the month of merger announcement (ANN) in panel A and the month of completion in panel B. Some time intervals in panel A end at month -1. We do not end them at month 0 to avoid including trades after the announcement date. The corresponding intervals in panel B end at month 0. Since trading stops for the acquired firm on the completion date, our results can not be contaminated by purchases after completion even when month 0 is included.

Panel A: Relative to announcement

| | Months around ANN | Number of | | Shares bought ($ '000) | % of equity bought |
		Managers buying	Shares bought		
Target		0.063	67.71	1.98	0.0094
Control	(-60,-13)	0.084	116.55	2.54	0.0159
t_c		-1.96	-1.12	-0.59	-0.98
Target		0.037	13.27	0.40	0.0015
Control	(-12,-1)	0.088	46.26	1.39	0.0038
t_c		-3.00	-2.54	-1.91	-2.36
t_t		-2.93	-2.75	-2.32	-2.28
Target		0.038	10.37	0.38	0.0015
Control	(-12,-7)	0.095	41.70	1.16	0.0049
t_c		-2.77	-2.85	-2.38	-2.26
t_t		-2.58	-2.90	-2.35	-2.28
Target		0.037	16.16	0.42	0.0016
Control	(-6,-1)	0.081	50.81	1.62	0.0026
t_c		-2.33	-1.53	-1.23	-1.12
t_t		-2.43	-2.54	-2.26	-2.25
Target		0.023	14.30	0.19	0.0008
Control	(-3,-1)	0.078	33.98	0.89	0.0028
t_c		-2.73	-1.36	-2.58	-1.91
t_t		-4.00	-2.49	-2.63	-2.47

Table 4 (cont.)

Months relative to completion	Number of		Shares bought ($ '000)	% of equity bought
	Managers buying	Shares bought		
(-60,-13)	0.059	66.23	1.96	0.0093
	0.085	113.64	2.49	0.0152
	-2.54	-1.10	-0.57	-0.91
(-12,0)	0.042	44.69	1.32	0.0044
	0.077	51.62	1.40	0.0052
	-2.71	-0.28	-0.11	-0.32
	-1.89	-0.76	-0.74	-1.26
(-12,-7)	0.048	19.49	0.66	0.0020
	0.082	54.83	1.69	0.0048
	-1.54	-1.52	-1.03	-1.68
	-0.90	-2.28	-1.82	-2.08
(-6,0)	0.037	66.28	1.89	0.0066
	0.073	48.87	1.16	0.0055
	-2.83	0.42	0.72	0.29
	-2.27	0.00	-0.06	-0.58
(-3,0)	0.032	39.22	1.70	0.0063
	0.074	59.42	1.29	0.0073
	-2.73	-0.64	0.35	-0.20
	-2.34	-0.95	-0.20	-0.58

Table 5
Purchases of top managers around merger announcements and completions in targets vs.
control during 1941-1955 and 1956-1961.

The table shows the average values per month of each of the four measures of purchases by
officer-directors for each time interval. The row labeled t_c shows the matched-pairs t-
statistic for the cross-sectional difference between the means of the target and control
firms. For months (-12,-1) and its subintervals, a similar t-statistic for the time-series
control (t_t) is shown for the difference between a given interval and months (-60,-13).
The sample consists of 132 NYSE firms acquired during 1941-61. Each target firm was
matched with a control firm on the NYSE in its 2-digit SIC code industry that had the
closest market value of equity as of the end of the year before the merger announcement.
The control firm was not acquired for at least 12 months after the completion of the
merger of its matched target firm. All dollar values are expressed in thousands of
inflation-adjusted 1965 dollars. Month 0 is the month of merger announcement (ANN) in
panel A and the month of completion (CMP) in panel B.

Months around ANN		Panel A: Months around announcement							
		1941-1955				1956-1961			
		Number of		Shares bought ($ '000)	% of equity bought	Number of		Shares bought ($ '000)	% of equity bought
		Managers buying	Shares bought			Managers buying	Shares bought		
(-60,-13)	Target	0.076	84.06	2.24	0.014	0.050	52.33	1.74	0.0048
	Control	0.078	52.79	1.38	0.006	0.089	176.57	3.63	0.0255
	t_c	-0.07	0.84	0.86	1.27	-3.27	-1.63	-1.20	-1.87
(-12,-1)[d]	Target	0.049	15.04	0.53	0.0022	0.026	11.59	0.28	0.0008
	Control	0.094	53.45	1.74	0.0037	0.082	39.48	1.06	0.0038
	t_c	-1.50	-1.63	-1.18	-1.01	-3.24	-2.28	-2.57	-2.41
	t_t	-1.91	-1.91	-1.73	-1.74	-2.30	-2.24	-1.54	-2.46
(-12,-7)	Target	0.055	14.87	0.56	0.0023	0.022	6.13	0.20	0.0006
	Control	0.094	31.74	0.89	0.0044	0.096	51.07	1.42	0.0054
	t_c	-1.22	-1.49	-0.80	-1.01	-2.80	-2.44	-2.39	-2.09
	t_t	-1.33	-1.91	-1.69	-1.71	-2.59	-2.61	-1.62	-2.56
(-6,-1)[d]	Target	0.044	15.21	0.50	0.0022	0.029	17.06	0.35	0.0010
	Control	0.094	75.16	2.60	0.0031	0.069	27.89	0.70	0.0022
	t_c	-1.47	-1.33	-1.05	-0.47	-2.08	-0.89	-1.34	-1.67
	t_t	-2.07	-1.89	-1.75	-1.73	-1.36	-1.78	-1.45	-2.29
(-3,-1)[d]	Target	0.036	13.30	0.22	0.0013	0.010	15.25	0.17	0.0004
	Control	0.088	31.95	0.82	0.0026	0.069	35.89	0.96	0.0031
	t_c	-1.46	-1.02	-1.81	-0.75	-2.82	-0.93	-1.86	-2.19
	t_t	-2.31	-1.91	-2.09	-1.88	-3.73	-1.63	-1.64	-2.67

Table 5 (cont.)

		Panel B: Months around completion							
		1941-1955				1956-1961			
Months around CMP		Number of		Shares bought ($ '000)	% of equity bought	Number of		Shares bought ($ '000)	% of equity bought
		Managers buying	Shares bought			Managers buying	Shares bought		
(-60,-13)	Target	0.069	82.45	2.20	0.0140	0.049	50.97	1.73	0.0048
	Control	0.082	53.39	1.36	0.0058	0.089	170.35	3.56	0.0241
	t_c	-0.72	0.79	0.84	1.25	-3.43	-1.58	-1.17	-1.78
(-12,-1)[d]	Target	0.049	15.98	0.57	0.0022	0.035	71.70	2.03	0.0066
	Control	0.077	57.00	1.73	0.0039	0.077	46.55	1.10	0.0063
	t_c	-1.24	-1.78	-1.22	-1.20	-3.03	0.59	0.89	0.08
	t_t	-1.59	-1.94	-1.70	-1.75	-1.09	0.47	0.22	0.50
(-12,-7)	Target	0.063	18.68	0.91	0.0027	0.034	20.25	0.43	0.0013
	Control	0.083	74.73	2.59	0.0044	0.081	36.10	0.85	0.0051
	t_c	-0.54	-1.24	-0.82	-0.69	-2.04	-1.09	-1.37	-1.71
	t_t	-0.36	-1.75	-1.22	-1.62	-0.96	-1.52	-1.34	-2.05
(-6,-1)[d]	Target	0.038	13.66	0.29	0.0017	0.036	115.81	3.39	0.0112
	Control	0.071	41.81	0.99	0.0035	0.074	55.51	1.31	0.0073
	t_c	-1.74	-1.73	-2.12	-1.03	-2.28	0.76	1.08	0.53
	t_t	-2.24	-2.09	-2.09	-1.85	-0.98	0.84	0.80	1.03
(-3,-1)[d]	Target	0.027	5.38	0.18	0.0009	0.037	71.07	3.13	0.0114
	Control	0.090	47.39	1.06	0.0031	0.059	70.75	1.51	0.0113
	t_c	-2.58	-2.13	-2.27	-1.55	-1.18	0.01	0.73	0.01
	t_t	-2.69	-2.18	-2.12	-1.92	-0.75	0.46	0.63	0.88

[d]In Panel B, this interval ends at 0.

Table 6
Top managers' sales around merger announcements in targets vs. nontargets.

The table shows the average values per month of each of the four measures of sales by officer-directors for each time interval. The row labeled t_c shows the matched-pairs t-statistic for the cross-sectional difference between the means of the target and control firms. For months (-12,-1) and its subintervals, a similar t-statistic is shown for the time-series control (t_t), for the difference between a given interval and months (-60,-13). The sample consists of 132 NYSE firms acquired during 1941-61. Each target firm was matched with a control firm on the NYSE in its 2-digit SIC code industry that had the closest market value of equity as of the end of the year before the merger announcement. The control firm was not acquired for at least 12 months after the completion of the merger of its matched target firm. All dollar values are expressed in thousands of inflation-adjusted 1965 dollars. Month 0 is the month of merger announcement (ANN) and C is the month of merger completion.

Months around ANN		Number of		Shares sold ($ '000)	% of equity sold
		Managers selling	Shares sold		
(-60,-13)	Target	0.041	127.26	4.47	0.0150
	Control	0.059	76.72	2.16	0.0081
	t_c	-1.82	1.33	1.25	1.35
(-12,-1)	Target	0.049	152.49	4.53	0.0278
	Control	0.068	230.84	6.31	0.0193
	t_c	-1.34	-0.43	-0.37	0.35
	t_t	0.82	0.31	0.02	0.65
(-12,-7)	Target	0.045	77.44	1.79	0.0097
	Control	0.076	407.43	11.15	0.0334
	t_c	-1.62	-0.99	-1.12	-0.84
	t_t	0.52	-1.17	-1.27	-0.90
(-6,-1)	Target	0.052	227.53	7.26	0.0459
	Control	0.061	54.25	1.48	0.0051
	t_c	-0.54	1.21	1.23	1.05
	t_t	0.87	0.68	0.54	0.79
(-3,-1)	Target	0.045	77.64	3.15	0.0065
	Control	0.076	61.37	1.86	0.0044
	t_c	-1.42	0.31	0.46	0.57
	t_t	0.33	-0.83	-0.39	-1.59
(0,C)	Target	0.053	964.42	29.01	0.0341
	Control	0.061	93.51	2.70	0.0095
	t_c	-0.42	1.04	1.07	1.05
	t_t	0.93	1.04	1.07	1.04