The Effects of Trading Halts and the Advantage of Institutional Investors:

Evidence from the Istanbul Stock Exchange

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ABSTRACT

Firm-specific trading halts have become a common practice in many international stock markets during the last two decades. However, the effects and effectiveness of trading halts remain controversial among academics and regulators. In this debate, it seems crucial to understand how the trading behavior of institutional and individual investors, the market microstructure and the duration of the halts are related to the effects of the trading halts. By considering these factors, this paper assesses the efficiency of trading halts by examining the return, volatility and volume behavior around news-initiated trading halts through the unique microstructure and trade-by-trade data of the Istanbul Stock Exchange (ISE). It also investigates, for the first time, the trading behavior of different types of investors such as individuals, mutual funds and brokerage houses around trading halts.

Findings show that most of the new information is absorbed by prices within fifteen minutes (almost completely in an hour) following the resume of trading after a halt. Reaction of investors to bad news is slower and stronger than good news. Our results are robust to time-of-halt and duration-of-halt effects. Price discovery mechanisms based on fully computerized trading, non-existence of monopolist specialists and opening batch mechanisms, and restrictions on order cancellation during trading are some of the factors that accelerate the speed of adjustment in prices. In spite of halts, institutional investors would take the price advantage of new information during the halt period ahead of the individual investors by doing better timing in trading after halts. Institutional investors systematically buy and sell at more favorable prices around halts than individual investors do. Finally, overall evidence suggests that trading halts are effective in dissemination of valuable information and play an important role in enhancing the efficiency of the price discovery mechanism.

Keywords: trading halts – price discovery – regulatory effectiveness – institutional investors – microstructure
JEL Classification Code: G14 – G15

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I. Introduction

Trading halts on single stocks have become common practice on many international stock markets over the last two decades. For example, on average the New York Stock Exchange (NYSE) suspends the trading of four common stocks every day.[1] Trading halts initiated by the regulators are intended to protect investors and public interest by maintaining stability and an orderly market. Exchanges usually call trading halts to protect both the uninformed traders and/or the specialists from excessive levels of asymmetric information that leads to significant transaction costs [(Glosten and Milgrom (1985), Kyle (1985)]. The stated purpose of trading halts is to allow investors an opportunity to react to new information and to facilitate the orderly emergence of a new equilibrium price. It aims to ensure that all investors have fair access to market information when material information comes to the market or any drastic change occurs. However, there is a big debate as to whether in practice these goals can be reached. Proponents argue that halts allow investors time to react to material news events and so allow the market participants to discover the new price level. On the other hand, opponents argue that halts are an unnecessary barrier to price discovery and do not prevent an increase in volatility following the halts. This debate on costs and benefits of trading halts on stocks has increased not only the interest of market regulators and investors but also recently those of academics.

II. Literature Review

For example, Fabozzi and Ma (1988) find for the NYSE stocks in the over-the-counter market that volatility is significantly lower in the reopen period than during the trading halt, suggesting that the trading halt has been successful. Similarly, Stein (1987), Greenwald and Stein (1988, 1991), and Kodres and O'Brien (1994) argue that trading halts can reduce possible excessive price fluctuations and allow orderly trading in financial markets.

[1] Spiegel and Bhattacharya (1998).

Greenwald and Stein find that trading halts can facilitate price discovery by reducing transactional risk and thereby encourage traders to participate in the market. Kodres and O'Brien (1994) also highlight an additional benefit based on the fact that traders may not be able to instantaneously adjust their trading interests to new information due to technological limitations or costs of continuous monitoring. Traders might be more willing to supply liquidity during normal conditions when they are given an opportunity to cancel orders during extreme market changes. Kyle (1988), Greenwald and Stein (1988, 1991) and Brady (1998) also argue that temporary closure allows liquidity providers, particularly buyers, time to reenter the market to absorb a further decline and for market participants to mentally catch up on the market. Corwin and Lipson (2000) and Brooks, Patel, and Su (2003) find that traders actively reposition their limit orders during NYSE halts. From a different perspective, Edelen and Gervais (1997) model individual trading halts and argue that halts are beneficial to exchanges as they facilitate the monitoring of specialists' actions in order to curb potentially abusive pricing behavior.

Additionally, trading halts can be beneficial if they are used to transmit information during times of unusually high transaction-price uncertainty. Hopewell and Schwartz (1978) find that there are rapid and permanent adjustments in the price levels over suspensions on the NYSE. Schwartz (1982), Greenwald and Stein (1998, 1991) support this. Empirical results on smaller stock exchanges seem more promising than those on the largest exchanges, as shown by Kryzanowski (1979) for Canadian, Kabir (1992) for Amsterdam, De Ridder (1990) for Stockholm and Wu (1998) for Hong Kong stock markets. For example, De Ridder concludes that a halt is an effective mechanism to disseminate new information since there is no abnormal return behavior detected both before and after a halt. Wu (1998) demonstrated that prices adjust to new information quickly during the suspension by classifying trading halts as mandatory and voluntary on the Hong Kong Stock Exchange.[2] Market adjustment to voluntary suspensions actually starts prior to the suspensions and the mandatory suspensions show more

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[2] In some exchanges listed companies may ask the exchange to halt its stock's trading due to information release, and the exchange halts trading based upon the request of listed companies. This is called a voluntary halt. In a mandatory halt, the exchange makes the halt decision by itself without receiving any request from listed companies.

effectiveness than the voluntary suspensions in disseminating information. Kryzanowski and Nemiroff (1998) indicate that much of the information disclosed during a trading halt is reflected in the prices within the first half hour, and most is reflected within a few hours. Hong and Wang (2000) show that periodic market closures can generate variations in the trading and return distribution, such as: higher mean and volatility of returns and higher trading activity around the close and open. They also show that market closures can make prices more informative about future payoffs. On the other hand, Christie, Corwin, and Harris (2002) find that opening methodology that is used after halts matter to increase the information dissemination during the halt in NASDAQ. They also find that the period following a halt is also characterized by a large number of unusually small trades. This trading pattern is consistent with Chan, Christie, and Schultz (1995) who suggest that investors are reluctant to commit to large trades during the period of high price uncertainty following halts during the opening on the NASDAQ.

By contrast, a number of models suggest that trading halts may actually reduce the informative side of prices and not prevent excessive volatility. One argument against trading halts is that they impede price formation because trading aggregates information that is distributed among market participants. Howe and Schlarbaum (1986) compare the SEC-initiated halts with NYSE-initiated halts and find that there is a substantial negative return over the halt, and stock prices continue to decline in the following weeks with the negative news after the SEC-initiated halt.[3] Ferris, Kumar, and Wolfe (1992) find similar results for SEC-initiated halts. Kabir (1994) confirms the doubts on the efficiency of this mechanism in disseminating price-sensitive information by showing abnormal returns in the month following the month of trading reinstatement for the London Stock Exchange. Others, such as Grossman (1990) and Subrahmanyam (1994), suggest that a temporary market closure, at best, postpones market activity until trading can again generate information and, at worst, exacerbates the problem by inducing traders to exit the market before it closes. Brown and Jennings (1989), Grundy and

[3] The SECs of countries usually also have authority to halt the trading of stocks. These trading suspensions are often intended to force compliance with reporting, and disclosure requirements protect investors by ensuring that sufficient information is available to make informed decisions. Compared to exchange halts, SEC-initiated halts are a very small portion of exchange halts. Additionally, SEC-initiated halts are substantially longer than others.

McNichols (1989), Dow and Gorton (1989) also point out that excess volatility may not be necessarily avoided during the suspension since trading suspension blocks the opportunity to trade. Lee et al. (1994) conclude that halts are unsuccessful in fulfilling their mandate of reducing "excess volatility," and that disruption of "learning by trading" is the only feasible explanation for their findings. Consistent with these models, Amihud and Mendelson (1987), Stoll and Whaley (1990), and Gerety and Mulherin (1992) find that market openings are associated with high levels of temporary volatility and that volatility and volume are much higher at the NYSE's opening than at its closing. Christie, Corwin, and Harris (2002) find that even with information transmission, uncertainty associated with NASDAQ halts is not resolved by the time the halt is lifted. This finding suggests that either trading halts result in increased uncertainty or trading halts are called in response to high expected volatility. This latter explanation is consistent with Spiegel and Subrahmanyam (2000) who find that liquidity can be improved if disclosure rules require firms to report high variance events to the exchange.

Within this framework, there is little evidence that shows that return, volatility and volume behavior of stocks are significantly affected by trading halts, suspensions or circuit breakers. Most of the evidence in previous studies documented higher volatility and volume around trading halts, both before and especially after the trading halt [Kryzanowski (1979) and Kryzanowski and Nemiroff (1998) on the Canadian stock market, Kabir (1992, 1994) on the Amsterdam and London stock markets, Brailsford (1995) for the Australian market, Spiegel and Bhattacharya (1998), Wu (1998) for the Hong Kong stock market, Ferris, Kumar, and Wolfe (1992), Lee et al. (1994), Hong and Wang (2000), Corwin and Lipson (2000), Christie, Corwin, and Harris (2002), Brooks, Patel, and Su (2003), on the NYSE and NASDAQ]. According to these studies, trading halts are associated with a temporary increase in volatility and trade activity in the post-halt period as new information is incorporated into prices within a certain period of time after reinstatement. Then these figures drop to pre-halt levels after some time. For example, Corwin and Lipson (2000) find volatility, during the first 30 minutes after NYSE halts, ranges from three to six times that of non-halt days, and diminishes over the

For example, the number of SEC-initiated halts was only one tenth of NYSE halts and the average length is 12.2 weeks.

next two hours. Volume is over 600% higher than on non-halt days and remains abnormally high for at least two hours after the halt. They also find an increase in spreads at the reopen which dissipates within two minutes for order imbalance halts. For new halts, spreads begin to increase 15 to 90 seconds prior to the halt and return to pre-halt levels within 21 minutes. Limit order depth near the quotes is unusually low before, during, and after trading halts, similar to Goldstein and Kavajecz (2000) who show that wider spreads and diminished depth occured on the day following the Black Monday Crash on the NYSE in 1987. In addition, although overall liquidity is reduced during this period of market stress, large numbers of submissions and cancellations of orders during halts result in significant price discovery.

Corwin and Lipson (2000) argue that factors other than decreased liquidity, such as unmeasured information effects or the closure of trading, explain the majority of the observed post-halt volatility. For example, a lack of trading increases the risk of holding the stock over closures, causing investors to reduce their hedging trade at the market close. The anticipated decrease in investors' hedging trade tends to make the stock price decrease over time as a larger premium is demanded on the stock. On the other hand, while information asymmetry increases during the closure, it often decreases as trading continues after the market reopens. When decreasing information asymmetry causes the stock price to increase during the day, the return over trading periods is higher than the return over nontrading periods. Also, trading reveals an investor's private information which moves the price; hence, returns over the trading period tend to be more volatile than returns over nontrading periods. On the other hand, if the entire information is not incorporated into the prices by the time trade is resumed, the asymmetric information hypothesis predicts return persistence. Spiegel and Bhattacharya (1998) show that there is a significant difference between news-pending and order-imbalance related suspensions. They find that order-imbalance suspensions have significant return reversals, whereas the news-pending suspensions have significant return persistence. If a suspension occurs for inventory-related reasons, then after trade resumes, the stock's price will head back toward the pre-suspension price as the dealer's inventory returns to its desired level. Hence, the inventory-control hypothesis predicts return reversals. The size of the firm also appears to play a large role in the duration of a suspension. The authors also suggest that the

NYSE has improved its ability to absorb more extreme news in time after the regulation that shortened the halt time.

In a recent study, Brooks, Patel, and Su (2003) examine the market reaction to the unanticipated events in the NYSE and find that the response time is longer than previous studies have reported. Initial reaction takes place over 20 minutes and prices tend to reverse over the following 2 hours. Volume remains higher for more than 90 minutes. Spreads remain wider over an hour. By comparing day-time vs. overnight events, the authors also find that day time events take 15 minutes to catch up to those following overnight events which suggests that the halt might be beneficial. When the news comes to the market during the trading day, the market reacts more slowly on price, volume, and bid-ask spreads than previous research would indicate. There is also a 3-minute delay in response to daytime events. On the other hand, there is an immediate price reaction for overnight events. Their results suggest that if traders can reposition their trading interests by submitting new orders and canceling old orders, trading may not be needed to reach market-clearing prices. But they do not conclusively state that trading halts are superior, since trading halts tend to last much longer than the 15 minutes for prices following day-time events to catch up to those following overnight events.

Limited number of past research shows that there has been much debate on the effectiveness and appropriateness of the trading halts in stock markets. Despite a number of researchers recently investigating the effects of trading halts, the results of the previous studies make the issues controversial among academics and regulators. There is no consistent and conclusive evidence on the issue yet, in spite of its importance for policymakers focused on market efficiency, regulatory effectiveness, risk management and market microstructure. There is also not much information about the reactions of certain groups of investors to the trading halts. The effects of halts are also important for investors who want to understand the behavior of stock prices from a portfolio management perspective. Another critical factor in this debate is how market microstructures, disclosures and specific halt mechanisms are related to the effects of trading halts. In this debate, we need more evidence and stronger international evidence through empirical work to find proper responses to several questions. What are the

effects of halts on return, volatility, and volume behavior of stocks? What are the consequences and the implications of halts both for regulators and investors? How are halts effective in dissemination of information? Are trading halts effective on controlling volatility by easing tension and facilitating price discovery? Should regulators institute them in financial markets? Or, are halts useless? Existing empirical research is mainly on North American stock markets. There are few studies on other markets that rarely use intra-day data that give an opportunity to make a more sensitive analysis. More specifically, there has been no study conducted on emerging markets using intra-day data.

To address this issue, this paper assesses the efficiency of trading halts to disseminate information by examining the return, volatility and volume behavior around trading halts on the Istanbul Stock Exchange (ISE). A sample of news-initiated trading halts on the ISE has been studied to examine the effects of alternative halt mechanisms on the stock market by using trade data. Since halts are only based on news on the ISE, the study also measures and compares the speed of adjustment of information following material company announcements that result in halts. Additionally, this is the first empirical study on this issue of an emerging stock market which might add new insight with regard to the use of a regulatory measure on small stock exchanges such as the ISE. The distinctive microstructure and institutional setting of the ISE. a highly volatile and active market, gives us a unique opportunity to test the impact of trading halts on a market. Perhaps one of the most important differences of the ISE from other markets is the severe restrictions on the order cancellation during the trading which increases the role of trading halts in the price discovery process. Moreover, examining the ISE would offer a unique opportunity for a better explanation of the efficiency of trading halts on a purely computerized order-driven market without any influence of call or batch-type auction or opening mechanisms following halts, market makers or specialists on the trading halt mechanism, as is the case in exchanges in the U.S. On the other hand, previous studies examine only the halts that occur during trading, and exclude halts that occur before the trading day starts. Differently, this study includes, categorizes and compares both types of halts that occur during the trading day (intra-day) and before the trading day starts (pre-opening). Finally, another important difference of this study is the investigation of the trading behavior of institutional investors such as mutual funds and brokerage houses that constantly

follow the market around the trading halts by making a comparison with individual investors who mostly are far from the news that was announced over the trading period. There is no evidence so far in the literature on this issue to enable us to understand who primarily benefits from the release of information that results in halts and whether there are systematic differences among the trading characteristics of different types of investors.

III. Empirical Research

A. Institutional Specifications of the ISE

The ISE as a leading emerging market has increasingly attracted international interest over the last decade. On average, foreign and international institutional investors own 50% of the free float of the shares at the ISE. Total market capitalization is approximately US$ 80 billion, and it is a highly active market with an average daily trading value of US$ 753 million with 315 listed stocks at yearend 2003. The ISE is an order-driven, multi-price, continuous auction market with no market makers or specialists. Trading is realized through a computerized trading system. There is no opening session or pre-open procedure at the ISE. The market is open Monday through Friday from 9:30 a.m. until 12:00 p.m. (morning session) and after a two-hour lunch break from 2:00 p.m. to 4:30 p.m. (afternoon session). The “National-100 Index” (ISE-100), the main market indicator of the ISE is a market capitalization-weighted index and represents at least 85% of the total market capitalization, traded value, number of shares traded and number of trades realized in the market.

B. Trading Halt Policy of the ISE

Similar to many exchanges worldwide, the ISE imposes a trading halt on any listed stock based on various reasons. A trading halt can be imposed to force information disclosure, to eliminate asymmetric information that can hurt investors, and to await a firm’s pending announcement that is expected to affect the prices significantly. Any other reason that exchange officials deem unfair for the market participants, such as if serious financial problems of a firm prevent it from running the business operations properly or if the company

no longer meets the listing requirements of the exchange. Halts are mainly applied due to disclosure of information and announcements made by listed companies. There is no regular halt mechanism based on order imbalances and volatility. Trading halts on the ISE are applied to release the price-sensitive significant material information such as stock splits, capital increases, investment expenditures, mergers and acquisitions that are sent by the listed companies within the regulations of public disclosure. Under the disclosure regulations, listed companies must disclose the material information and make announcements to the public through the ISE. Companies are not allowed to disclose news to the media or data vendors before it has been made publicly available by the exchange. News-initiated trading halts usually last short periods of time depending on the length and importance of the news, decided on by exchange officials. News-initiated halts usually last 15-30 minutes on average, rarely exceeding the current trading day, and is lifted after new information has been released through the exchange. Investors or brokers are able to cancel or change their outstanding orders during the halt. During the trading hours, order cancellation or change is severely restricted. It is subject to the meeting of certain requirements that make the order cancellations and the changes, except for amendments, so difficult and even impossible once the order has been entered into the trading system. If the order is not matched with another order during the trading, it will remain in the system until the end of the session (or day if it is so defined). The price of orders can only be amended. This means that investors are only allowed to increase the price of their buy orders and to decrease the price of their sell orders during the trading hours unless the order meets the cancellation requirements. Under these conditions, order cancellation during trading is almost impossible. These restrictive regulations aim to increase the length of the time period in which orders remain in the system and so increase the limit order depth and avoid sudden extreme changes in liquidity during the trading. But once the trading of a specific stock is halted, investors or brokers are capable of canceling or changing their outstanding orders as they wish. Therefore, halts are very important for investors in the ISE and almost the sole opportunity for investors to reposition, change and cancel their orders after the new information comes to the market. It also helps investors to avoid exposure of informational asymmetries.

Inventory-control problems are a major cause of suspensions in some exchanges like the NYSE where the specialist or market-making mechanism exists. But this is not the case for the ISE since there are no order-imbalance halts, designated specialists or market makers. Trading halt decisions are made only by regulators (Exchange or CMB). However, the decision for a halt is usually made and applied by the Exchange. The Capital Market Board of Turkey (the CMB is the main regulatory body of capital markets) can ask the exchange to halt or suspend the trading of one or a group of stocks for similar reasons. SEC-initiated halts usually last longer than exchange-initiated halts, up to several days depending on the reasons for the halt.

C. Data and Methodology

In this study, data consist of only news-initiated halts including both news pending and news-dissemination halts which have been initiated by exchange officials when an information release is expected to have a significant impact on prices. Data on each halt are obtained from the ISE's official files. They include the halt and resume time, the trade-by-trade price and volume data of halted stocks, the number of trades for the 21-day period from 10 days prior to the halt through 10 days after the halt. All prices are adjusted to incorporate actions such as splits, dividends, right issues and capital increases. Data also cover the identities of buyers and sellers of trades on halted stocks. All data are publicly available except for the identities of each side of the trade, that information which shows for whom the trade is executed whether it be individual investors, brokerage houses' own portfolios, or mutual funds. During trading, brokers must give the identity of their clients while entering their orders to the computerized trading system. For example, if the order is given by a mutual fund, the letter "F" is attached to the order to indicate that the order belongs to a mutual fund. Similarly, "P" indicates a brokerage house's own portfolio, and "M" the non-institutional or individual investor.

Table 1 represents the summarized statistics for the news-initiated trading halts on the ISE. Trading halts that are not resolved prior to close, halts that occur more than once for the same stock in a day, and halts that do not have complete data are excluded from the initial sample. Only the stocks that halted and resumed on the same trading day are considered here. Thus, a total of 33 observations were eliminated, yielding a sample of 323 trading halts (Panel A).

Using the ISE's halt files, 323 trading halts (events) belonging to 182 stocks were identified between January 1999 and April 2003.

Halts are also classified as positive (good news), negative (bad news), and zero (neuter) abnormal return based on the returns right after following the reopening of trading similar to the tick test of Lee and Ready (1991).[4] If the initial return is positive, it is classified as good news, and so on. There are 145 halts in which their initial return is positive, 116 out of 323 are negative, and 62 of them are zero (Table 1, Panel B). To distinguish the effects of trading halts that occurred before the opening of the sessions, halts are also categorized by their time due to different patterns of stock returns and volume at openings and closings.[5] Thus, three different halt groups are formed: halts before the first session (Pre-1 halts), during trading (Intra-halts), and before the second trading session but after the first session (Pre-2 halts) since there are two separate trading sessions per day on the ISE. Intra-halts (198) capture the large portion of all sample. Panel B shows that the probability of a release of positive news during trading is greater than that of negative news. Companies have a tendency to announce negative news during non-trading hours. They apparently release more positive information during sessions (intra) than negative information. In the case of a full sample, the mean and median duration in news halts is 35 minutes and 18 minutes, respectively (Panel C). These times are significantly shorter than those on other exchanges.[6] The average duration in pre-1 halts is approximately three times that of the average duration in intra-halts. The average and median duration of intra-halts is 22 minutes and 14 minutes, respectively. The main reason behind the differences in average durations is that the most of the pre-1 halts occurred as a result of the appearance of

[4] A random examination of news that causes halts has also confirmed the appropriateness of the method used in classification. Assessments of favorableness of the information released during the halt is parallel to the classification method based on the tick test of Lee and Ready (1991).

[5] Harris (1986), French and Roll (1986), Amihud and Mendelson (1987, 1991), Jain and Joh (1988), Stoll and Whaley (1990), Gerety and Mulherin (1992), Andersen and Bollerslev (1997)

[6] There were nearly 400 halts on the NYSE in 1995 and 1996. Most of them were news-related halts. The mean duration for news halts is 86 minutes on the NYSE. The median duration is around 150 minutes in the Canadian markets. The majority of the halts occur at the opening. Regulator-initiated suspensions tend to last longer as in the Hong Kong market (Wu, 1998). Median suspension days are three and one for the mandatory group and voluntary group, respectively. Hopewell and Schwartz (1978) find that news suspensions lasted 261 minutes on the NYSE between 1974 and 1975. Delayed openings tend to last longer than intraday suspensions (437 minutes versus 149 minutes). The longer the trading halt, the larger the price adjustment. A similar result was described by Schwartz (1976).

(officially) undisclosed (insider) information in newspapers or media before the trading day started. In this situation, companies are required to confirm or to correct the information in the newspaper whether true or false to protect the investors who most probably would trade based on this information when the trading starts. Exchange officials ask the company to confirm or correct this news before the opening; otherwise the exchange halts the trading of its stock until the company officially releases the information through the exchange. Therefore, it usually takes longer than regular disclosure of the information during the trading. The longer the period that the stock is halted, the more uncertainty and informational asymmetry is expected in this period, which might cause higher volatility and price change at the reopening.

In Table 1, Panel D and E show the halts based on the time-of-day, day-of-week, month-of-year. Consistent to Spiegel and Bhattacharya (1998), a Monday effect exists for news-related suspensions since most suspensions occur on Mondays. Naturally, the number of halts is strongly correlated with the amount of news disclosed by the companies. 27.9% of halts happen just before the opening and in the first half-hour of trading. It also implies information leakage since the officially undisclosed (insider) information might have been published on the newspaper before the opening. On the other hand, there are more halts in the first quarter of the calendar year than in the other months of the year and fewer halts in the summer holiday months. Thus, seasonality in halts across the months implies that companies tend to make important decisions such as investments, dividends and other issues related to corporate operations at the beginning of the year. Moreover, most of the stocks that frequently have been subject to halt are from small or medium size companies.[7] Some of them are distressed firms or the firms that have legal problems.

Similar to previous studies, event-study methodology was used to examine the liquidity and volatility before and after the trading halt.[8] A major difficulty is isolating the impact of trading halts to find what would have happened if no halts had existed. It is not possible to test this directly. This is common methodology used in such studies. In this study, the market response

[7] In the sample period, on average, 35.2% of the halted stocks are included in the ISE-100 index. Only 13.9% of them are included in the ISE-30 index which covers the largest 30 companies.

[8] Lee et al. (1994), Kryzanowski and Nemiroff (1998), Corwin and Lipson (2000).

to the information shocks that result in trading halts is examined by using return, volume and volatility behavior of halted stocks. Thus, the same methodology used in earlier studies on the data from January 5, 1999 to April 9, 2003 was applied. This study specially focuses on the behavior of return, volatility and trading activity across 15-minute intervals around halts while also considering the existence of two different sessions in a day.

Throughout the study, return, volatility, and trading activity in event-period (from t-40 to t+40) are compared to the same characteristics of the halted stocks during a non-event period (from t-200 to t-41 and from t+41 to t+200), where (t) represents the first 15-minute interval following the resume of trading after halt and called a "halt interval". Thus, data for each halt cover the whole period (from t-200 to t+200) which contains 200 fifteen-minute intervals (10 trading days) before and after the event date. Time intervals on both event (halt) and non-event (non-halt) periods are defined based on the halt time and reopening time of stocks. The halt interval (t) is the period between the start of the halt and the end of the first interval following the resume of the trading after the halt. 15-minute pre-halt periods are measured backward from halt time to opening, and 15-minute post-halt periods are measured forward from the resume time of the halt to closing.[9] By extending the event-period up to 10 hours before and after the halt provides an opportunity to observe the behavior of halted stocks up to two trading days before and after the halt. Trading volume and the number of trades in each interval are used as a representation of trading activity. Similar to Lee et al. (1994) and Corwin and Lipson (2000), to control the stock-specific time-of-day effects, abnormal measures for each 15 minute interval in the halt period are computed by comparing the values in the event period interval with the values of exactly the same matching interval (time-of-day) of halted stock in the non-event period.[10] For example, to measure the abnormal return on halted stock i on interval *t* (AR_{it}) is calculated as follows:

$$AR_{it} = R_{it} - R_{itn}$$

[9] In 94.8% of the fifteen minute intervals in the whole event-period, there is at least one trade for the halted stocks. Intervals that have no trade are not included in the measurements.

[10] The same computation is also generated by using market returns and very small and negligible differences between these two methods were found.

R_{it} = return on stock i on interval *t* of halt period measured by the percentage change in stock price on interval *t* of halt period relative to the price on interval t-1 of halt period.
R_{itn} = return on stock i in interval *t* of non-halt period measured by the average of percentage change in stock price on same matching interval *t* of non-halt period relative to the price on interval t-1 of non-halt period.

Then, average abnormal returns of each interval in an event period are computed by averaging the ARs of each stock in each of the same intervals.

$$\text{AAR}_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it}$$

where N is the number of halts. Abnormal measures of trading volume and number of trades are also computed in the same way. Abnormal average returns around suspensions are measured and compared by using different event windows ranging from one interval to 40 intervals: [-40, -1], [-20, -1] [-12, -1], [-8, -1], [-4, -1], -4, -3, -2, -1, 0, 1, 2, 3, [1, 4], [1, 8], [1, 12], [1, 20], [1, 40]. All volatility, average return and trading activity measures of stocks are tested by using t-test and nonparametric Wilcoxon sign rank tests.

IV. Empirical Findings

The Volatility Spillover Hypothesis

The effectiveness of halts on return volatility, price discovery and corresponding changes in trading volume during periods before and after halts are examined since the major goal of halts is to prevent the excessive volatility due to a sudden information release during trading. Since the halts are related with the release of information, the ability of the market to absorb this new and important information before, during and after the halt is investigated here. If the halt is effective, volatility in the post-halt period should return to its pre-halt period level in a short period of time. On the other hand, trading halts might cause volatility to be spread out over a longer period by preventing trading. Another point is that new information might change the equilibrium price by changing the fundamental value of the firm. One question here might be how quickly is new information reflected into prices so that volatility returns to its normal or pre-halt level? If there is a spillover in volatility, how long does a spillover last?

Finally, how effective is the trading halt to control the volatility? These questions are also important from the perspective of an efficient market hypothesis. The effect of spillover to subsequent trading days or intervals is described in the volatility spillover hypothesis.

To test the volatility spillover hypothesis, an 81-interval event period was used; from session t–40 to t+40, before and after the halt interval, t_0. For halted stocks, session t = 0 represents the halt, whereas t-1 and t+1 one interval prior and following the halt. Similar to Kim and Rhree (1997) and Corwin and Lipson (2000), interval returns-squared was used as volatility measure; $V_{t,i} = (r_{t,i})^2$ where $r_{t,i}$ represents close-to-close return for each stock on interval *t* relative to previous interval, t–1. This measure is calculated for each halted stock. Then, the averages for each session in the 81-session event period were found. If the halted stock shows greater volatility during post-halt intervals than pre-halt intervals, and if it does not return to its pre-halt average quickly, then this finding supports the hypothesis that trading halts are not successful in controlling volatility since volatility spillovers.

The findings are displayed in Table II. They show that there is no increase in volatility before the halt. In the full sample, on average, volatility jumps significantly to 23.95% on halt interval t from 2.23% on t-1, then declines sharply to 3.50% in the next fifteen-minute interval t+1 (Figure 1). However, post-halt volatility seems to be slightly larger than pre-halt volatility: volatility is down to its normal pre-halt level within an hour. A large decline in volatility of halted stocks on t+1 might be seen as evidence in favor of halts. It shows that trading halts do not cause a volatility spread to the longer horizons. High volatility is greatly influenced by information at the reopening. Another reason behind the slightly higher volatility in the post-halt period would be the change in the fundamental value of the stock as a result of the announcement, unmeasured information effects and a reflection of the remaining part of the information as it is given out to a larger number of investors or the market closure itself.[11] Findings indicate that halts at least do not spread the volatility out longer than if there were no halts. Volatility most probably would have been higher in longer periods following the announcement if the halts did not exist. Evidence indicates that a trading halt accelerates the absorption of new information and helps prices reflect material information faster than

otherwise would be possible. It does this by giving a chance to participants not only to reach and to evaluate the disclosed information but also to cool off without the stress and haste they face during the trading. Therefore, consistent with Ross (1989), halts are associated with a temporary increase in volatility in the post-halt period as new information is absorbed by the prices.

Panel A-B-C in Table 2 shows that findings for the other sub-groups such as positive and negative news-initiated, pre-1, pre-2 and intra halted stocks are in line with the findings for the full sample. Similar to the full sample results, volatility declines sharply following a halt interval both for positive and negative news halts (Figure 2). Post-halt volatility of negative news-initiated halts is not only slightly higher than volatility on the pre-halt period but also higher than that of positive news-initiated halts. For example, the average volatility in the post-halt period (+1, +4) for positive and negative return, halts are 2.63% and 4.36%, respectively. Similarly, post-volatility of pre-1 halts are higher than post-volatility of pre-2 and intra halts due to combined effects of material information and the opening (market closure effect) itself. This is consistent with our expectations since earlier studies show that return, volatility and volume follow a U-shape pattern over the trading. The first interval following the halt of pre-1 stocks becomes the first trading interval or opening of trading. Therefore, relatively higher volatility would be expected for pre-1 halts in the first few intervals following the resume of trading after a halt. Another reason behind the slightly higher volatility and absolute returns of pre-1 stocks might be the media coverage of news that caused the halt. Most of the pre-opening halts occur due to the publication of non-public (insider) information in newspapers. Media coverage of these type of news before trading day facilitates the dissemination of information, draws the attention of investors more strongly than it does during the trading. Media coverage of non-public information (not officially announced by a company based on regulation) might also change the dispersion in investor beliefs consistent with Kim and Verrecchia (1991). Thus, all result in a higher return, volume and volatility at opening. Interestingly, stocks that are halted before the opening of the first session (pre-1) due to a negative information release (pre-1-neg), face significantly larger volatility than that the volatility of stocks halted due to positive announcements (pre-1-poz).

[11] Corwin and Lipson (2000).

Volatility on these stocks does not return to its pre-halt level as quickly as the return of pre-1-poz stocks. This shows that effects of negative announcements that caused a delayed opening are greater and last longer than the effects of positive announcements. In spite of the large decrease in volatility on t+1 relative to halt interval in pre-1-neg stocks (from 40.81% to 2.26%), volatility remains higher than its pre-halt level until the end of event-period. The market clearly reacts more strongly to the negative announcements that cause a halt before the start of the day. Moreover, findings for the sub-periods 1999-2000 and 2001-2003 also confirm our findings and all results are statistically significant. Positive news-initiated halted stocks are examined by categorizing the stocks into two groups such as stocks included in Index-30 and non-Index-30 stocks. Findings indicate that volatility of non-index stocks is not only significantly higher both before and after a halt than Index-30 stocks, but also last longer in the post-halt period than index stocks.[12] Reaction of investors to the news on non-index stocks during the halt interval is significantly stronger than those of Index-30 stocks (31.4 vs. 16.4). Volatility of non-index stocks remains high relative to its average in the pre-halt period up to an hour following the resume of trading.

Finally, overall evidence here confirms that volatility significantly declines as the new information is absorbed by prices, and returns almost to its pre-halt level immediately following the halt mostly within the first fifteen minutes and fully within one hour following resume of trading after halt. It suggests that volatility in the post-halt period is a temporary phenomenon, and halts do not spread volatility over longer period. In contrast, halts help to prevent overreactions to announcements by facilitating the dissemination of valuable information during the halt period.

Delayed Price Discovery Hypothesis

If the market is semi-strong efficient, a new natural equilibrium price is expected to reflect the new information within a short period of time after the halt. Therefore, if halts are related to dissemination of material information, the return in the first interval following a halt should be relatively large to show how quickly new information is absorbed by the market. It would then be expected that a quick market adjustment in prices would leave the abnormal returns

[12] This is not given here due to space limitations but can be obtained from the author on request.

small and insignificant in the post-halt period. Otherwise, it means there is a delay in price discovery, which implies that there should be large positive (negative) returns for stocks that are halted due to positive news (negative news) in the post-halt period. In order to examine the immediate and subsequent price movements following the halt, return series around the halt interval are examined and compared.

Table 3 presents the average abnormal returns (AARs) at each interval in different event-windows during the halt period. The first column shows various event windows from one interval to 40 intervals. This table clearly demonstrates that there is a large fluctuation in the prices of halted stocks only right at the reopening following the halt. There is no further significant change in prices after the halt interval. In absolute terms, the AAR on the halt interval (t) is 3.55%. For positive news-initiated halts, the AAR during the halt is large and significant with 4.46%, and then starts declining. Thus, all new information is absorbed by the market even within the first 15 minutes after the reopening of trading. There is no significant continuation in the increase in prices and no correction or reversals in the post-halt period. It seems that the prices of halted stocks reach their new equilibrium during the halt interval after the new information. Figure 3 illustrates clearly that the cumulative average return (CAR) of positive news halts at the end of the event period remains almost at the same level as on the halt interval. Furthermore, the first 1-minute and 5-minute returns following the reopening are examined. However, they are not given here. I find that most of the change (78%) in prices within the first 15 minutes is generated within the first one minute following the reopening after the halt. At the end of the first minute, the AAR is 2.76%, which was 3.55% at the end of the first 15 minutes. This is similar for positive and negative news. Gradual increases in prices in the pre-halt period (from t-40 to t-1) by approximately 2%, which suggests that there might be information leakage or insider trading prior to announcement-initiated halt has been discovered. These findings might also imply that halts are a response to pre-halt informational asymmetry. However, test results are not strong enough to statistically confirm insider trading.

The behavior of AARs for negative news-initiated halts is very similar to those of positive news-initiated halts. After a large decline (-4.13%) on the halt interval, prices remain almost at the same level for an hour. Then, prices keep declining until the end of the next six hours

resulting in CAR reaching -6.26%. Thus, an announcement of negative news causes a total drop in prices by 7.76% following the halt. However, most of the information is reflected in the prices within the first fifteen minutes after trading resumes,it seems that the impact of negative news is stronger and also lasts longer than that of positive news. This is consistent with Hong, Lim, and Stein (2000) who document that bad news travels slowly and so generates an under-reaction in the returns due to restrictions and difficulties on short-sales. An alternative explanation might be the disposition effect, which shows that investors tend to hold losers too long and tend to sell winners too early. On the other hand, similar to positive news-initiated halts, the prices of negative news-initiated stocks increase by 1.50% before the halt, which is not consistent with information leakage or insider trading scenarios. Pre-halt abnormal return behavior of these stocks is very similar to those of two of the three sample stocks described by Kryzanowski and Nemiroff (1998). Continuation in negative returns of bad news-initiated halts in a post-halt period might be attributed partially to the reaction of investors to abnormal positive returns in the pre-halt period due to news that is inconsistent to investors' expectations. Larger negative returns over a longer time in the post-halt period might show additional reactions of investors to positive returns in the pre-halt period just before the announcement of negative news. The CARs are also examined for the halts that generate zero initial abnormal returns. Naturally, by definition, there is no change in prices in the halt interval as well as in the post-halt period. However, the CAR of these stocks is 2.69% at the end of the event period. As it is just before the halt, abnormal returns either before or after the halt interval are mostly insignificant.

Overall, AAR and CAR inferences for all three different news groups are in line with those for a full sample. Consistent with Ross (1989), trading halts appear to be a response to increased volatility associated with a temporary increase in the return and volatility as new information is reflected in stock prices immediately after the resume of trading. The price discovery mechanism seems efficient since most of the disclosed information is immediately absorbed by the prices within fifteen minutes.

To detect the impact of time of halts on return behavior of halted stocks, the AARs of halted stocks are examined by dividing them into three different groups based on their halt time: pre-

1, pre-2, and intra. In addition, these groups are also divided based on the favorableness of the news that results halts, such as positive or negative. Findings are displayed in Table 3 Panel A-B-C. AARs move similarly to those of the full sample. Almost all information is reflected in prices for all stock groups within the first interval after trading starts following the halt. There are no significant differences among groups, which indicates that time of halts does not have a considerable effect on the return behavior of halted stocks. Halting the stocks before the opening or during trading does not change the reaction of the market participants to the new information. Figure 4 shows that, in either situation, prices almost reach their natural equilibrium very quickly following the announcement through the halt. It might be interpreted that the halt is a useful mechanism to prevent the delay in responding to the daytime events relative to overnight events as observed on the NYSE by Brooks et al. (2003). Thus, halts seem to be the main reason behind the fact that there is no significant difference between the speed of adjustment of information for intra-day halts and the pre-open halts on the ISE, where continuous trading is the only mechanism used both at the opening and during the day, unlike the NYSE.

On the other hand, prices of stocks that are subject to negative news-initiated halts absorb the negative information over a longer period than their positive counterparts by facing larger absolute (negative) returns. This effect exists especially for the stocks that are halted prior to the opening of the trading day (pre-1) due to a negative information release. These stocks decline -5.14% in halt interval and keep declining until t+33, when it reaches -11.40%. Positive abnormal returns before the halt also disappear for these stocks. Obviously, the price adjustment of bad news is slower than that of good news, especially if bad news arrives before the opening. Another interesting difference between these groups is observed in positive news-initiated halts that occur before the second session (during the lunch break). The AAR of these stocks is 4.50% on halt interval, an additional 6% increase until the end of the event period makes the cumulative abnormal return after the announcement at 10.5%. However, statistical test results are mostly insignificant. Although there are some minor differences based on the favorableness of news and the time of the halt, our findings are consistent with previous evidence, which shows that the market mechanism works effectively to absorb the new

material information and reflect in the prices as quickly as possible in a short period of time, e.g. within fifteen minutes.

Trading Interference Hypothesis

In this section, the trading activity of halted stocks is investigated. It is expected to see an increase in volume and the number of trades following the resume of trading immediately after the halt due to the positive relationship between the trading activity and volatility seen in previous studies.[13] It is also expected that investors would increase their trading activity for liquidity and portfolio rebalancing purposes after receiving new information. Further increases in volume after a halt interval might be seen as evidence of trading interference by halts. Therefore, if the halt is to be effective to control the volatility, trading activity in terms of volume and number of trades should not increase excessively in the post-halt period. In order to examine the trading activity of the stocks that are halted in our sample, each of the 81 intervals in the event period are analyzed. Abnormal trading activity is measured similarly to abnormal returns as used by Kryzanowski and Nemiroff (1998) and Corwin and Lipson (2000).[14]

Table 4 represents the interval-to-interval abnormal trading activity around halts. Consistent with a large abnormal return and volatility on the halt interval, and also to earlier studies, there is a significant increase in trading volume on halt intervals for all stock groups except for negative halts. However, abnormal volume is positive only on interval *t*. Following the halt interval, the abnormal number of shares traded in the post-halt period declines until the end of the event period and remains lower than that of the pre-halt and non-halt periods. For example, in a full sample, after an increase in abnormal volume on the halt interval (20193), it begins to decrease on t+1 and remains negative all through the post-halt period. Volume drops even on halt interval (-24231) for negative news-initiated halted stocks, whereas it increases for positive news-initiated halts (+ 76165). Stocks that are halted before the opening have larger abnormal volume on halt interval and subsequent fewer intervals than other sub-groups due to

[13] French and Roll (1986), Harris (1986), Schwert (1989), and Stoll and Whaley (1990), Jones, Kaul, and Lipson (1994).

information release and a delayed opening. But, only a few of them are statistically significant, displaying no significant differences in volume of halted stocks between the pre- and post-halt periods. This represents the investors' unwillingness or reduced willingness to supply liquidity around the halt due to the uncertainty for an equilibrium price based on new information.

Another measure that is used to represent the trading activity is the number of trades. The number of trades in each 15-minute interval around the halts is shown in Table 5. Similar to volume, there is no significant movement in an abnormal number of trades in the pre-halt period, except in one interval prior to halt (t-1). Interestingly, the increase in the number of trades begins just one interval before the halt, and after a significant jump from 6.3 to 53.7 during the halt interval, starts to decrease following this interval until the end of the event period. Obviously, investors who hold these stocks would make revisions on their positions depending on the favorableness of the announcement. Similarly, many new investors, who have no position on these stocks, also start to trade due to the disclosure of new information. Therefore, it would be expected to have an increase in trading activity in the post-halt period by product of price discovery process. But as soon as the new information is spread out to large numbers of investors and reflected in the prices, post-halt trading activity should return to its average of the non-halt period. So, the question here is how quickly it returns to its pre-halt or non-halt levels. Even though findings show that the number of trades in the post-halt period is slightly higher than its average during non-halt and pre-halt periods, it is clear that most of the trading activity is generated within the first interval at the reopening after the halt. There is almost no significant trading activity after the first 60 minutes following the resume of trading. On the other hand, the pattern is similar to our observations for the full period, both in abnormal volume and in the number of shares traded in the sub-period of 2001-2003 which were larger than those of 1999-2000. Furthermore, an increase in the number of trades when volume drops implies that the trade size becomes smaller after the halt. This is consistent with Chan, Christie, and Schultz (1995), who suggest that investors are reluctant to commit to large trades during the period of high price uncertainty following halts.

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[14] Additional computations based on percentage changes in these measures, not reported here due to space limitations, provide the similar results.

Finally, return, volume, and volatility of halted stocks in the post-halt period are compared with those of the pre-halt period through paired t- and signed rank tests. Paired test results displayed in Table 6, confirm our previous findings. Price adjustment is mostly (almost completely) generated within fifteen minutes (an hour). This lasts longer (up to two hours) for bad news. Overall, return, volume and volatility tend to return to their non-halt period averages in a short period of time after trading is resumed following the halt. Thus, halts seem to facilitate the orderly emergence of a new equilibrium price by allowing investors a chance to reach, evaluate and eventually react to the new important information.

Duration of Halts

Another argument regarding the effects of halts is the length of the halt. Lee et al. (1994) quotes that halt mechanisms cannot be improved by increasing the length of the halt period by showing the inverse relation between duration and price adjustment. Consistently, Spiegel and Bhattacharya (1998) suggest that the NYSE has improved its ability to absorb more extreme news in time with shorter suspensions after the regulation that shortened the halt time. In fact, what is the effect of the duration of halts on price discovery? Is the duration of halts effective on the dissemination of information? Can it be said that the longer the halt the faster the formation of new equilibrium price? Or, do longer halts generate excessive volatility by preventing trading and increasing uncertainty? What is the optimum average length of halts: an hour as on the NYSE or less as on the ISE? To enlighten these issues, the sensitivity of return, volatility, and volume behavior of halted stocks to the duration of halts has been investigated. To measure the differences among the stocks that are halted for different durations, stocks are categorized into four different groups based on their halt duration.[15] These groups are: stocks that are halted up to 15 minutes, from 15 to 30 minutes, from 30 to 60 minutes and more than 60 minutes. Table 7 shows that there are no significant differences in return, volatility and volume behavior of stocks depending on the duration of their halts. Both pre-halt and post-halt movements in these measures are consistent with our previous findings for the full sample. One difference for the stocks that are halted up to 15 minutes is the drop in the volume on the halt interval (-13754), and a slightly higher spillover in return

[15] Duration is calculated from the beginning of the sessions for the stocks halted before the opening of the first and second sessions (pre-1 and pre-2).

and volatility in two immediate intervals subsequent to halt intervals (t+1 and t+2) than those of the groups for 15-30 and 30-60 minutes. Minor differences might be interpreted as a 15 minute-long halt is too short to let the information be disseminated and evaluated by the investors. It seems that volatility and volume of stocks that halted for 30 to 60 minutes tend to return to their non-halt level slightly faster than those of stocks halted for up to 30 minutes. But it does not necessarily show that the longer the halt period the faster the absorption of new information into prices since findings for the stocks that are halted more than 60 minutes are not consistent with this. This is consistent with Lee et al. (1994), and Spiegel and Bhattacharya (1998). In fact, the average duration of news-initiated halts on the ISE is significantly shorter than the average duration of the same type of halts in other international exchanges.[16] Even though the duration of halts is shorter than other stock markets on the ISE as an emerging market, the market seems to respond to new information faster or at least as fast as it does in more developed (presumably efficient) stock markets such as the markets in the US and Canada. Therefore, one suggestion that can be drawn for regulators is that the duration of halts should be neither longer nor shorter than it needs to be. It seems that an average of 30 minutes is sufficient to let information be received and evaluated by a large number of investors.

On the other hand, in addition to the duration of halts, there might be additional factors affecting the speed of reflection of new information. What can be the other factors that determine the speed of adjustment in stocks prices after announcements? When looking at the microstructure of the ISE, several differences from the US markets can be seen. Some of the factors that might make the speed of adjustment on the ISE as fast as it is in US markets are, unlike the NYSE, the price discovery mechanism based on continuous trading via fully computerized trading, the non-existence of monopolist intermediaries such as specialists, investor characteristics and small size of the market. More specifically, inefficiencies in call auctions and batch mechanisms employed at the opening by the NYSE relative to the continuous trading process of the ISE might be effective on the speed of adjustment following halts. Continuous trading would help investors reach equilibrium prices by learning through

[16] The mean duration for news halts is 86 minutes on the NYSE (Corwin and Lipson, 2000). The median duration is around 150 minutes on the Canadian markets (Kryzanowski and Nemiroff, 1998). The median is one day on the Euronext Exchange (Engelen, 2002).

trading. Furthermore, one would also expect quicker adjustment in prices in the NYSE via specialists whose main obligation is to provide stability and facilitate equilibrium in the market. The specialist's opening price should be close to the market clearing price; however, this is not in practice (Lee et al., 1994). So, what is the contribution of specialists to the price discovery at opening after the halt? This causes doubt on the specialists' role in the price discovery process at the opening following the trading halts. Therefore, halts on a continuous trading market without any intermediaries such as specialists seem to be an important tool to increase the speed of adjustment in prices. In addition, the size of the market might be another factor that affects the speed of adjustment. Obviously, disseminating the information to a large number of investors in a country with a large area and population and time-zone differences would be slower than that of a relatively smaller market and country.

On the other hand, halts are almost the sole opportunity to cancel or to change orders by traders on the ISE since there are severe restrictions on order cancellation during trading. Order changes and cancellations during a halt facilitate reaching equilibrium. This is also consistent with Brooks, Patel, and Su (2003), who find heavy activity in order changes, cancellations, or submissions. In sum, differences in the speed of adjustment after halts on two markets might be attributed to differences in the market microstructure such as price discovery mechanisms, and the sizes of the two markets. Taken together, the main finding of this study, the quick reaction of prices to new information on a short period of halt leads us to raise another question:

Who takes advantage of new information that results in a halt?

Who generates this quick reaction and who benefits from the release of information even though there is a halt that aims to disseminate the new information to a large number of investors? Is it institutional investors and day traders who continuously follow news over the trading or is it individual investors? Furthermore, a large portion of the daily trades is executed by day traders on the ISE whose only job is to follow the news and to trade frequently to make profits by taking intra-day positions. Day traders usually do not carry positions to the next trading day, which leaves their net position almost zero at the end of the day. Their role in the formation of stock prices is considerably important on the ISE. Similarly, institutional

investors follow the news and market continuously and so have a greater advantage to reach news than most of the individual investors. Therefore, both day traders and especially institutional investors might facilitate the formation of prices by stepping ahead of the other type of investors. In order to understand whether some types of investors, such as institutional investors who take advantage of new information as they constantly watch the market ahead of individual investors, trading patterns of different types of investors should be analyzed.

Even though it is not directly possible to identify day traders, a regulation of the ISE allows us to make a distinction among investors. According to this regulation, brokerage houses must define which type of investor they enter orders into the trading system for to express the identity of the owner of order, as Individual (M), Mutual Fund (F) or Portfolio (P). “Individual” represents the orders given on behalf of individual investors, whereas “Mutual Funds” for mutual funds. “Portfolio” represents the brokerage house’s own portfolios. Thus, our data set gives us an opportunity to observe whether certain types of investors first take advantage of new information during and immediately after the halt. If so, there should be systematic differences in buying and selling prices among different types of investors, but also an increase in the share of certain investors in trading activity in the post-halt period. To examine this issue, a volume-weighted average of buying and selling prices of each type of investors for each halted stock within the four intervals before and after halt are computed. In addition, the total number of shares traded by each type of investor around the halts is calculated. Table 8 demonstrates and compares the volume-weighted average prices of buys and sells for each type of investor.

By examining trades (buying and selling prices) executed on behalf of individuals, mutual funds, and brokerage houses' portfolios, I find that volume-weighted average buying price of individuals on halted stocks on halt interval is 0.554% and 0.274% more expensive than the buying price of mutual funds and portfolios on the same stocks, respectively (Panel A). The volume-weighted average selling price of individuals on halted stocks over the same interval is 0.52% and 0.51% lower than the selling price of funds and portfolios, respectively. It seems that individuals buy at higher and sell at lower prices than mutual funds and especially brokerage houses' portfolios. Individuals buy at a higher price than funds and portfolios in

two-thirds of the stocks. These differences are relevant also for good news-initiated and bad news-initiated halts. In good news-initiated halts, individuals buy 0.595% and 0.127% more expensive and sell 0.50% and 0.82% cheaper than mutual funds and portfolios, respectively, on the same stocks in the first interval following the resume of trading. In bad news-initiated halts, individuals buy 0.46% and 0.13% more expensive and sell 0.51% and 0.04% cheaper than mutual funds and portfolios on the same stocks on the first interval following the resume of trading after the halt.

To check whether these differences are due to an information release or occur systematically even in the pre-halt period, the same analysis for the pre-halt period is applied. Findings indicate that these differences are significantly lower or in favor of individual investors in the pre-halt period, which confirms that mutual funds and brokerage houses take the price advantage of the information release ahead of the individual investors by having better timing in buying and selling right after the trading halts. By extending the period to one hour following resume of trading, similar results are found. Then, to confirm the robustness of the results, price differences are computed on an equal-weighted basis (Panel D). Price differences that are consistent with previous results confirm that institutional investors exploit the priority of individual clients by responding to new information before uninformed individuals. However, there are trading halts to disseminate information particularly to individual investors who are not watching the market during the day. It is clear that mutual funds and portfolios of brokerage houses systematically buy and sell at more favorable prices than non-institutional or individual investors around the halts. Another observation is the change in trading activity of funds and portfolios immediately after a halt relative to the pre-halt period. Table 8 Panel B shows that the number of stocks on which mutual funds and portfolios traded on intervals following the halt has almost doubled; however their trading share in total trades has not changed much (Panel C) since most of the halted stocks are small and medium size stocks.[17] Lastly, trading activity of different types of investors are investigated based on stocks they trade such as ISE-30 stocks and non-index stocks. Consistent to expectations, Panel E and Panel F show that institutional investors buy cheaper and sell more expensive than individuals

[17] There are no small cap. or medium cap. mutual funds in Turkey. Most of the mutual funds mostly carry blue chips and the stocks of the ISE-30 index, which are large cap. stocks.

on stocks that are included on the Index-30 than those on non-index stocks since they heavily hold index stocks.

V. Summary and Conclusion

Trading halts on single stocks have become a common practice on many international stock markets over last two decades. The stated purpose of trading halts is to allow investors an opportunity to react to new information and to facilitate the orderly emergence of a new equilibrium price. However, a limited number of previous studies, mostly on US markets, cause a big debate on whether these goals can be reached in practice among academics and regulators. There is as yet no consistent and conclusive evidence on the effectiveness and appropriateness of the trading halts in stock markets in spite of its importance for policymakers and investors within the perspectives of market efficiency, portfolio management, risk management and market microstructure. There is also not much information about the reactions of certain group of investors to the trading halts. This paper assesses the efficiency of trading halts to disseminate information by examining the return, volatility and volume behavior around trading halts in a leading emerging market - the Istanbul Stock Exchange - which has a different market microstructure than US markets. To address this issue, a sample of news-initiated trading halts on the ISE was investigated to examine the effects of trading halts on return, volatility, and volume behavior of halted stocks by using trade-by-trade data within 15 minute intervals for approximately a 5-year period. This study also investigates, for the first time, the trading behavior of different types of investors, such as individual, mutual funds, and brokerage houses around trading halts, by using a unique dataset, which defines the identities of traders.

Findings show that return, volume and volatility tend to return to their non-halt period averages in a short period of time after trading is resumed. Most of the information is absorbed by the prices within fifteen minutes (most completely in an hour) following the resume of trading after the halt. In general, results are robust to the time-of-the-halt and the duration of halt's effects. Halts clearly do not prevent the stock price reaching its equilibrium or spread the volatility out longer periods, it otherwise would have been. There is also no consistent

evidence regarding the existence of insider trading or information leakage before the announcement in the pre-halt period. Overall results indicate a semi-strong form informational efficiency of the ISE. Traders use the halt as an opportunity to reposition their trading interest, submit new orders and avoid unwanted fills of their orders, depending on the new information, without constantly monitoring market conditions. On the other hand, consistent to previous studies, the reaction of investors to the negative announcements is not only stronger than that of positive news but also lasts longer, which generates short-term under-reaction in returns. Restrictions on short sale, disposition effect, and positive abnormal returns in the pre-halt period seem to be an explanation for this. This is relevant especially for negative announcements that cause a halt before the start of the day due to media coverage and a delayed opening. Even though the duration of halts on the ISE is shorter than on developed stock markets, the market seems to respond to the new information quicker or at least as quickly as it does in more developed US markets due to a different market microstructure, such as fully computerized trading, price discovery mechanisms based on continuous trading, the non-existence of monopolist specialists, restrictions on order cancellation during trading, investor characteristics and the small size of the market. Although the investigation of the effects of duration on halts show that duration has no significant effect on trading patterns of halted stocks around halts, findings imply that 30 minutes is time enough to let information be received and evaluated by a large number of investors.

Alternatively, one of the most striking findings of this study are the differences of trading behavior of individuals, mutual funds, and brokerage houses around trading halts: mutual funds and brokerage houses take the price advantage of the information release ahead of the individual investors by having better timing in trading after the halt since they constantly watch the market. Similar to day traders, institutional investors systematically buy and sell at more favorable prices than non-institutional or individual investors around halts by using this advantage. However, halts facilitate the dissemination of valuable information during the halt period to the large number of investors, and give them a chance to react to the new announcement; halts cannot completely prevent institutional investors and day traders from exploiting their natural advantage as a result of their professional activity. Obviously, if the trading halts did not exist, the advantage of being first in market after the release of new

information would have been bigger since there were less informed individual investors. Halts increase the speed and magnitude of the adjustment in prices, it otherwise would have been.

Finally, overall evidence suggests that trading halts seem to facilitate the orderly emergence of a new equilibrium price by allowing investors a chance to reach, to evaluate and eventually to react to the new important information. Hence, news-initiated trading halts have an important role in enhancing the efficiency of the price discovery mechanism.

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Table 1: Summary Statistics for News-Initiated Halts

This table displays the summary statistics for the stocks that halted due to information release. Panel A describes the data used in this study, whereas Panel B shows the number of stocks that halted based on time-of-the-day and favorableness of the news that cause halt. Intra denotes the stocks that halted intraday (during trading within the day). Pre-1 and Pre-2 present stocks that halted before the opening of first and second sessions of a trading day. Positive price change indicates that stock is halted due to positive news release based on tick test of Lee and Ready (1991) on initial returns following resume of trading. Panel C reflects the length of time that stock is halted across different halt categories. Time of the day, day of the week, and month of the year effects in halts are shown on Panel D and Panel E.

Panel A: Data Description

Years	Sample used	Initial sample
1999	148	163
2000	65	72
2001	33	36
2002	54	58
2003	23	27
total	323	356

Panel B: Number of Halts

	Full Sample	Intra	Pre-1	Pre-2
Full Sample	323	198	79	46
Positive price change	145	96	32	17
Negative price change	116	61	36	19
Zero price change	62	41	11	10

Panel C: Duration of Halts (hours:minutes)

	mean	median	min	max
Full Sample	0:35	0:17	0:04	3:50
Intra	0:22	0:13	0:04	2:17
Pre-1	1:11	0:55	0:10	3:50
Pre-2	0:31	0:20	0:05	1:53
Positive price change	0:34	0:16	0:05	3:11
Negative price change	0:48	0:18	0:04	3:50

Panel D: Halts Across Time of the Day

Time Interval	Frequency	Cumulative %
9:30	8	2.48%
10:00	82	27.86%
10:30	30	37.15%
11:00	24	44.58%
11:30	22	51.39%
12:00	13	55.42%
14:00	46	70.59%
14:30	20	76.78%
15:00	30	86.07%
15:30	25	93.81%
16:00	18	99.38%
16:30	5	100.00%
Total	323	

Panel E:	Halts Across Months of the Year	Halts Across Days of the Week	
Months	Frequency	Days	Frequency
Jan	43	Monday	91
Feb	37	Tuesday	42
Mar	49	Wednesday	40
Apr	33	Thursday	85
May	30	Friday	65
Jun	30	Total	323
Jul	16		
Aug	14		
Sep	10		
Oct	19		
Nov	24		
Dec	18		
Total	323		

Table 2: Volatility in Halt Period

This table shows the average volatility behavior around trading halts. *, **, *** denotes the statistical significance at t-tests, whereas a, b, and c at sign-ranked tests, at the one, five and ten percent levels, respectively. All represents full sample and positive indicates that stock is halted due to good news announcements,and so on. Intra denotes the stocks that halted intraday (during trading within the day). Pre-1 and Pre-2 present stocks that halted before the opening of first and second sessions of a trading day. "t", and (+1) represent the halt interval and first interval following halt interval, respectively. (+1, +40) denotes the period between first and 40 interval following halt interval. Similarly, (-40, -1) refers the period between one interval prior to and 40 interval prior to halt interval. Each interval consists of 15 minutes.

Panel A: Full Sample

Volat	all		positive		negative		zero		1999-2000		2001-2003	
(-40, -1)	2.6005	*a	2.7317	*a	2.4935	*a	2.5181	*a	2.5914	*a	2.6160	*a
(-20, -1)	2.6141	*a	2.7257	*a	2.4749	*a	2.6286	*a	2.5277	*a	2.7861	*a
(-12, -1)	2.7481	*a	2.9091	*a	2.7186	*a	2.4474	*a	2.6298	*a	2.9772	*a
(-8, -1)	2.7870	**a	3.0794	*a	2.5465	**a	2.5900	**a	2.4569	*a	3.4340	*a
(-4, -1)	2.2251	*a	2.0910	*a	2.1543	*a	2.6381	*a	2.1110	*a	2.4461	*a
(-4)	1.6877	*a	1.8076	*a	1.6683	*a	1.4590	*a	1.5784	*a	1.9062	*a
(-3)	2.2368	*a	2.4062	*a	2.0519	*a	2.2019	*a	2.2978	*a	2.1165	*a
(-2)	2.7494	*a	2.1441	*a	2.7107	**a	4.1065	***a	2.3710	*a	3.4728	**a
(-1)	2.2264	*a	2.0059	*a	2.1864	*a	2.7851	*a	2.1968	*a	2.2888	*a
t	23.9519	*a	29.3696	*a	30.5039	*a	0.0066	*a	21.9070	*a	27.9115	*a
(+1)	3.4950	*a	2.8243	*a	3.5168	*a	5.0068	*a	3.7274	*a	3.0258	*a
(+2)	4.5912	*a	3.7447	*a	5.1110	*a	5.4218	*a	4.2846	*a	5.1923	*a
(+3)	2.4848	*a	1.8110	*a	3.0257	*a	2.9841	*a	2.7167	*a	2.0428	*a
(+1, +4)	3.5806	*a	2.6338	*a	4.3605	*a	4.2499	*a	3.7909	*a	3.1613	*a
(+1, +8)	3.3284	*a	2.8348	*a	4.0392	*a	3.1426	*a	3.4905	*a	3.0028	*a
(+1, +12)	3.2652	*a	3.0388	*a	3.7528	*a	2.8864	*a	3.1539	*a	3.5078	*a
(+1, +20)	3.1732	*a	2.8641	*a	3.8219	*a	2.6683	*a	3.0576	*a	3.4210	*a
(+1, +40)	2.8420	*a	2.7771	*a	3.1507	*a	2.4209	*a	2.8175	*a	2.9009	*a

Panel B: Intraday Halts

Volat	allintra		pozintra		negintra	
(-40, -1)	2.4377	*a	2.5870	*a	2.0438	*a
(-20, -1)	2.4786	*a	2.5343	*a	2.1573	*a
(-12, -1)	2.6792	*a	2.7931	*a	2.5809	*a
(-8, -1)	2.5021	*a	2.7173	*a	2.0588	*a
(-4, -1)	2.3322	*a	2.2886	*a	1.7540	*a
(-4)	1.7032	*a	1.7583	*a	1.6767	*a
(-3)	2.5685	*a	2.6780	*a	2.4534	**a
(-2)	3.1324	*a	2.7635	*a	1.6678	*a
(-1)	1.9246	*a	1.9546	*a	1.2183	*a
t	23.1942	*a	33.1801	*a	23.8466	*a
(+1)	3.2651	*a	2.2331	*a	3.6317	*a
(+2)	5.1223	*a	4.5462	*a	5.1533	***a
(+3)	2.7397	*a	1.7803	*a	3.4965	*a
(+1, +4)	3.7141	*a	2.6088	*a	4.7627	*a
(+1, +8)	3.1536	*a	2.9534	*a	3.3374	*a
(+1, +12)	3.1417	*a	3.0563	*a	3.3905	*a
(+1, +20)	3.0917	*a	3.0171	*a	3.4205	*a
(+1, +40)	2.7338	*a	2.9465	*a	2.5836	*a

Panel C: Pre-Opening Halts

Volat	allpre1		pre1poz		pre1neg		allpre2		pre2poz		pre2neg	
(-40, -1)	2.7571	*a	3.0485	*a	2.6905	*a	3.0218	*a	2.9043	*a	3.6431	*a
(-20, -1)	2.8282	*a	3.0911	*a	2.7789	*a	2.8075	*a	3.0936	*a	2.9768	*a
(-12, -1)	2.5662	*a	3.0079	**a	2.4435	*a	3.3423	*a	3.4152	*a	3.7679	*a
(-8, -1)	2.9824	*a	3.8067	**a	2.5401	*a	3.6895	*a	3.8442	*a	4.3283	*a
(-4, -1)	1.8953	*a	1.8032	*a	1.9812	*a	2.3502	*a	1.5666	*a	4.1163	**a
(-4)	2.1077	*a	2.4156	*a	1.9929	*a	0.8173	*a	0.8072	**a	0.9280	**a
(-3)	1.4502	*a	1.9593	**a	1.0114	*a	2.1746	*a	1.7118	a	2.7870	***a
(-2)	0.9735	*a	0.5725	*a	1.4961	*a	4.4442	a	2.0227	***a	9.9932	a
(-1)	3.0497	*a	2.2654	*a	3.4243	**a	1.9648	*a	1.7247	**a	2.7569	***a
t	25.9064	*a	18.0492	*a	40.8054	*a	23.8563	*a	29.1607	*a	31.6575	*a
(+1)	4.2792	*a	5.2626	**a	2.2562	*a	3.1311	*a	1.3105	***a	5.4705	**a
(+2)	4.2119	*a	2.5488	*a	5.8524	**a	2.9072	*a	1.7815	***a	3.6498	***a
(+3)	2.0919	*a	2.6131	*a	2.0073	*a	2.0445	*a	0.5298	***a	3.4323	*a
(+1, +4)	3.7776	*a	3.4832	*a	3.6069	*a	2.6648	*a	1.2050	*a	4.3896	*a
(+1, +8)	3.8260	*a	2.5438	*a	4.9232	*a	3.2200	*a	2.7602	*a	4.4739	*a
(+1, +12)	3.5614	*a	2.6315	*a	4.2695	*a	3.2521	*a	3.6053	*a	3.7794	*a
(+1, +20)	3.5063	*a	2.5002	*a	4.4479	*a	2.9140	*a	2.6181	*a	3.7471	*a
(+1, +40)	3.2071	*a	2.4306	*a	3.9941	*a	2.6441	*a	2.3963	*a	3.2846	*a

Table 3: Average Abnormal Returns in Halt Period

This table shows the average abnormal return (AAR) behavior around trading halts. *, **, *** denotes the statistical significance at t-tests, whereas a, b, and c at sign-ranked tests, at the one, five and ten percent levels, respectively. Allabs, allintra,allpre1, and allpre2 represents the abnormal average returns in absolute terms. "All" represents full sample and positive indicates that stock is halted due to good news announcements,and so on. Intra denotes the stocks that halted intraday (during trading within the day). Pre-1 and Pre-2 present stocks that halted before the opening of first and second sessions of a trading day. "t", and (+1) represent the halt interval and first interval following halt interval, respectively. (+1, +40) denotes the period between first and 40 interval following halt interval. Similarly, (-40, -1) refers the period between one interval prior to and 40 interval prior to halt interval. Each interval consists of 15 minutes.

Panel A: Full Sample

AAR	allabs		positive		negative		zero		1999-2000		2001-2003	
(-40, -1)	0.9537	*a	0.0482	**b	0.0374	***a	0.0712	**	0.9702	*a	0.9209	**
(-20, -1)	0.9578	*b	0.0664	**	0.0311	c	0.0692		0.9607	a	0.9522	**
(-12, -1)	0.9739	***b	0.0832		0.0239		0.0026		0.9717	a	0.9771	*
(-8, -1)	0.9685	b	0.0921	***	0.0055	b	0.0543		0.9480	a	1.0088	**
(-4, -1)	0.9003		0.0460		0.0536		0.0075		0.8987	b	0.9025	***
(-4)	0.8507		0.1349		0.0450		0.1174		0.8227		0.9068	
(-3)	0.8812		-0.0818		0.0569		0.0251		0.9022	b	0.8399	***
(-2)	0.9184		0.1349		-0.0546		-0.0779		0.8933		0.9665	
(-1)	0.9510		-0.0040		0.1669		-0.0347		0.9768		0.8967	
t	3.5548	**b	4.4645	*a	-4.1265	*a	-0.0043		3.3214		4.0067	**b
(+1)	1.1504		-0.0350	*a	-0.0271		0.2618		1.1902		1.0700	
(+2)	1.2671		0.0926	*a	0.0181		-0.3148		1.2358	b	1.3287	
(+3)	1.0070	b	-0.2101	***c	-0.2025		0.1127		1.0602	**a	0.9054	
(+1, +4)	1.1287	a	-0.0703	a	-0.0600		-0.0267		1.1727	***a	1.0415	**
(+1, +8)	1.0624	**a	-0.0311	a	-0.1480	**a	-0.0264		1.0931	**a	1.0010	***
(+1, +12)	1.0461	**a	-0.0159	a	-0.1384	*a	-0.0574	b	1.0495	*a	1.0412	***
(+1, +20)	1.0359	***a	0.0286	a	-0.1292	*a	-0.0202	a	1.0376	**a	1.0342	
(+1, +40)	0.9999	**a	0.0017	a	-0.0932	*a	-0.0039	b	1.0043	*a	0.9922	

Panel B: Intraday Halts

AAR	allintra		pozintra		negintra	
(-40, -1)	0.9194	*a	0.0721	*a	0.0500	***a
(-20, -1)	0.9340	*a	0.0607	b	0.0653	
(-12, -1)	0.9729	**b	0.0835		0.0960	
(-8, -1)	0.9400	*c	0.1103	***	0.0913	
(-4, -1)	0.9142	b	0.0426		0.0502	c
(-4)	0.8504		0.0657		0.0083	
(-3)	0.9220		0.0159		0.2576	
(-2)	1.0422		0.1079		-0.1566	c
(-1)	0.8423	*a	-0.0191		0.0914	
t	3.4081		4.7603		-3.5387	*a
(+1)	1.0903		0.0475		-0.1592	
(+2)	1.2906	b	0.0899		0.0785	

(+3)	1.0225 [c]	-0.2380 [***c]	-0.2835		
(+1, +4)	1.1100 [a]	-0.0574 [b]	-0.0962		
(+1, +8)	1.0126 [a]	-0.0528 [a]	-0.1018 [a]		
(+1, +12)	1.0079 [**a]	-0.0586 [a]	-0.1524 [**a]		
(+1, +20)	1.0149 [a]	0.0188 [a]	-0.0700 [a]		
(+1, +40)	0.9722 [***a]	-0.0259 [a]	-0.0769 [**a]		

Panel C: Pre-Opening Halts

AAR	allpre1	pre1poz	pre1neg	allpre2	pre2poz	pre2neg
(-40, -1)	0.9916	0.0618	-0.0080	1.0347 [a]	-0.1035 [a]	0.0862
(-20, -1)	0.9977 [**c]	0.1642 [**c]	-0.0024	0.9868 [a]	-0.0847 [b]	-0.0154
(-12, -1)	0.9167	0.1214	-0.1183	1.0740	0.0086	0.0683
(-8, -1)	0.9759	0.1556	-0.1314	1.0779	-0.1165	-0.0077
(-4, -1)	0.8865	-0.0326	0.0570	0.8611	0.2046 [b]	0.0568
(-4)	1.0082	0.3566	0.0014	0.5534	0.0852	0.2713
(-3)	0.7323 [*b]	-0.5214 [**]	-0.1388	0.9704	0.2083	-0.2242
(-2)	0.6149	0.0305	0.2855	0.9457	0.4558	-0.4896
(-1)	1.1907	0.0041	0.0801	0.9751	0.0691	0.6697
t	3.8237	3.5603 [*a]	-5.1439 [*a]	3.7242	4.4967	-4.0239 [*a]
(+1)	1.3144	-0.2840	-0.1733	1.1269	-0.0065	0.6662
(+2)	1.2664	0.0809	0.2219	1.1646	0.1314	-0.5485
(+3)	1.0103 [***]	-0.2021	-0.3255	0.9342	-0.0672	0.2911
(+1, +4)	1.2414	-0.1757	-0.1316	1.0206	0.0567	0.1833
(+1, +8)	1.1568 [*c]	-0.1460	-0.3386 [*b]	1.1166	0.2835	0.0621
(+1, +12)	1.1174 [**]	-0.0485	-0.2030 [**]	1.0844	0.2521 [***]	0.0430
(+1, +20)	1.0964 [*]	0.0060	-0.2428 [*b]	1.0159	0.0986	-0.0903 [b]
(+1, +40)	1.0669 [**]	0.0010	-0.1405 [*]	0.9986 [c]	0.1462 [**]	-0.0495

Table 4: Average Abnormal Volume in Halt Period

This table shows the average abnormal volume (abvol) behavior around trading halts. *, **, *** denotes the statistical significance at t-tests, whereas a, b, and c at sign-ranked tests, at the one, five and ten percent levels, respectively. All represents full sample and positive indicates that stock is halted due to good news announcements,and so on. Intra denotes the stocks that halted intraday (during trading within the day). Pre-1 and Pre-2 present stocks that halted before the opening of first and second sessions of a trading day. “t”, and (+1) represent the halt interval and first interval following halt interval, respectively. (+1, +40) denotes the period between first and 40 interval following halt interval. Similarly, (-40, -1) refers the period between one interval prior to and 40 interval prior to halt interval. Each interval consists of 15 minutes.

Panel A: Full Sample

Abvol	all	positive	negative	zero	1999-2000	2001-2003
(-40, -1)	-853 [a]	5560 [a]	-6164 [a]	-3867 [a]	-30748 [*a]	57850 [*a]
(-20, -1)	-1526 [a]	8493 [a]	-8850 [a]	-9477 [a]	-26605 [*a]	47510 [***a]
(-12, -1)	-923 [a]	8916 [a]	-4260 [a]	-15416 [a]	-24832 [*a]	45342 [***a]
(-8, -1)	1735 [a]	13783 [a]	-4584 [a]	-11701 [a]	-25157 [*a]	54304 [***a]
(-4, -1)	7970 [a]	-6434 [a]	29371 [a]	-56 [a]	-16006 [***a]	55119 [***a]
(-4)	-6694 [a]	-28582 [a]	34360 [a]	-33617 [b]	-21713 [***a]	23344 [c]
(-3)	52706 [a]	-15199 [a]	101829 [a]	112408 [a]	8790 [a]	139221

(-2)	4227	a	-8589	a	26011	a	-6315	b	-25665	**a	61373	c
(-1)	-18361	a	26633	a	-44717	**a	-72699	**a	-25435	**a	-3462	a
t	20193	a	76165	a	-24231	a	-27489	a	-16671	a	91576	c
(+1)	-11903	a	7692	a	-17792	a	-46010	a	-37507	*a	39798	
(+2)	-11693	a	2124	a	-26923	a	-13173	b	-11069	a	-12915	a
(+3)	-4870	a	7994	a	17843	a	-72092	**a	-7862	a	831	a
(+1, +4)	-12800	a	2836	a	-15430	a	-41921	**a	-18667	*a	-1008	a
(+1, +8)	-3698	a	-2676	a	2195	a	-16860	a	-22311	*a	34373	**a
(+1, +12)	-9108	a	-11047	a	-5676	a	-11455	a	-27040	*a	27759	**a
(+1, +20)	-8665	***a	-12013	***a	-4724	a	-8438	a	-28229	*a	30941	*a
(+1, +40)	-6981	a	-10774	**a	-4475	a	-3074	a	-28862	*a	36766	*a

Panel B: Intraday Halts

Abvol	allintra		pozintra		negintra	
(-40, -1)	-878	a	7942	a	-15596	**a
(-20, -1)	133	a	15781	a	-20096	**a
(-12, -1)	2694	a	22001	a	-13682	
(-8, -1)	12077	a	36058	a	-9912	a
(-4, -1)	16568	a	8727	a	23220	a
(-4)	2429	b	-19983		49512	
(-3)	99591	a	25700	c	155325	a
(-2)	-21198	a	-563	a	-77783	*a
(-1)	-14552	***a	29755	a	-34173	a
t	17277	a	67598		-40924	a
(+1)	-16696	a	18552	b	-50715	**a
(+2)	-9056	a	-8625	c	-21626	a
(+3)	-48280	*a	-22243	a	-53306	**a
(+1, +4)	-27444	*a	-10648	a	-41022	*a
(+1, +8)	-13151	a	-3143	a	-29803	**a
(+1, +12)	-15270	**a	-10138	a	-29967	*a
(+1, +20)	-14047	**a	-8230	a	-27633	*a
(+1, +40)	-9404	**a	-8236	a	-16186	**a

Panel B: Pre-Opening Halts

Abvol	allpre1		pre1poz		pre1neg		allpre2		pre2poz		pre2neg	
(-40, -1)	-5086	a	-27572	*a	12979	a	8371	a	55229	***a	-10625	a
(-20, -1)	-6512	a	-33440	*a	14427	a	2406	a	48892	a	-12630	a
(-12, -1)	-8951	a	-42835	*a	13948	a	526	a	37106	a	-2679	a
(-8, -1)	-12142	a	-45864	*a	9514	a	-17395	a	10537	a	-10347	a
(-4, -1)	-2714	a	-49701	*a	39348	a	-11369	a	-887	a	40323	a
(-4)	-873	a	-57885	*a	52663	a	-60780	a	-18610	a	-59655	b
(-3)	11492	a	-70907	*a	78905	a	-85544	*a	-141980	**b	-31692	a
(-2)	27419	b	-18560	a	78760	a	73994	a	-29117	a	316726	a
(-1)	-48895	a	-51454	a	-52935	a	26855	b	186161	a	-64088	**a
t	29830	a	67921	*a	12780	a	16193	a	140059	a	-42518	c

(+1)	31227	a	12078	a	65955	c	-66353	***a	-62841	a	-66361	**b
(+2)	-5602	a	29392	c	-35366	a	-34097	a	5245	a	-29864	***c
(+3)	20198	a	42465	a	-8555	c	140422	c	115596	a	296963	a
(+1, +4)	7171	a	19320	a	-527	a	16061	a	43427	a	39909	a
(+1, +8)	16803	a	4089	a	33464	a	1674	*a	-10476	a	46715	a
(+1, +12)	6906	a	-6772	a	24733	a	-10615	a	-23491	a	15179	a
(+1, +20)	5480	a	-10975	a	25180	c	-10127	a	-36428	a	11631	a
(+1, +40)	-1822	a	-14322	**a	9813	a	-5762	a	-17793	a	5883	a

Table 5: Average Abnormal Number of Trades in Halt Period

This table shows the average abnormal number of trades (abntd) around trading halts. *, **, *** denotes the statistical significance at t-tests, whereas a, b, and c at sign-ranked tests, at the one, five and ten percent levels, respectively. All represents full sample and positive indicates that stock is halted due to good news announcements,and so on. Intra denotes the stocks that halted intraday (during trading within the day). Pre-1 and Pre-2 present stocks that halted before the opening of first and second sessions of a trading day. “t”, and (+1) represent the halt interval and first interval following halt interval, respectively. (+1, +40) denotes the period between first and 40 interval following halt interval. Similarly, (-40, -1) refers the period between one interval prior to and 40 interval prior to halt interval. Each interval consists of 15 minutes.

Panel A: Full Sample

abntd	all		positive		negative		zero	1999-2000		2001-2003	
(-40, -1)	1.1	*a	0.8	***a	1.8	*a	0.5	1.1	**a	1.0	
(-20, -1)	1.1	*a	0.2	a	2.0	*a	1.1	1.0	b	1.1	b
(-12, -1)	1.7	*a	1.2	a	2.9	*a	0.6	1.6	b	1.8	*
(-8, -1)	2.2	*a	2.1	**a	3.2	*a	0.3	2.3	*a	2.0	*
(-4, -1)	1.7	**a	1.2	a	2.2	***c	1.9	1.6	a	1.8	
(-4)	-0.2	a	-0.9	b	1.9		-2.3	-0.5		0.5	
(-3)	0.4	a	0.0	a	-0.5	b	2.9	0.1	a	1.0	
(-2)	0.2	b	-0.7	a	0.4	c	2.0	0.2	a	0.3	
(-1)	6.3	*	6.5	*	6.8	**	4.9	6.7	*	5.3	**
t	53.7	*a	67.2	*a	47.6	*a	34.0	53.9	*a	53.3	*a
(+1)	12.8	*a	19.6	*a	7.3	*b	7.6	9.9	*b	18.8	*a
(+2)	8.4	*	12.4	*a	3.9		8.2	6.2	*	12.7	*a
(+3)	5.0	*a	7.5	**	2.3		4.4	3.6		7.6	**
(+1, +4)	7.8	*	11.6	*a	4.4	*	5.7	6.4	*	10.6	*a
(+1, +8)	6.1	*	9.0	*a	4.0	*	3.5	5.5	*	7.3	**a
(+1, +12)	5.6	*	8.7	*a	2.9	*c	3.7	3.8	*c	9.1	*a
(+1, +20)	4.9	*b	8.4	*a	1.8	*a	2.8	2.7	*a	9.3	*a
(+1, +40)	4.0	*a	7.5	*a	1.0	**a	1.9	1.7	**a	8.7	*a

Panel B: Intraday Halts

abntd	allintra		pozintra		negintra	
(-40, -1)	0.3	**	0.0		-0.7	*a
(-20, -1)	1.0	*b	0.3		0.3	*a
(-12, -1)	1.8	*b	1.1	a	2.3	*a
(-8, -1)	2.2	*a	1.8	*a	2.5	*a
(-4, -1)	2.6	*a	1.7	a	2.2	***c
(-4)	2.5	a	2.6	*a	4.9	
(-3)	4.0	*a	2.9	a	3.1	b

(-2)	2.5	b	0.3	a	2.4	c		
(-1)	1.4	*	1.2	*	-1.5	**		
t	54.6	*a	63.3	*a	50.1	*a		
(+1)	14.1	*a	22.1	*a	4.6	*b		
(+2)	9.1	*	14.5	*a	1.0			
(+3)	5.6	*a	9.9	*a	-0.3			
(+1, +4)	8.5	*a	13.8	*a	1.3	*a		
(+1, +8)	6.8	*	10.8	*a	1.9	*		
(+1, +12)	6.7	*	10.9	*b	1.3	*c		
(+1, +20)	6.2	*a	11.0	*a	0.1	**c		
(+1, +40)	4.9	**a	9.3	**a	-0.3			

Panel C: Pre-1 and Pre-2 Halts

abntd	allpre1		pre1poz		pre1neg		allpre2		pre2poz		pre2neg	
(-40, -1)	0.8	*a	1.4	*a	2.3	*a	5.0	*a	3.3	*a	8.9	*a
(-20, -1)	0.4	a	-1.2	*a	3.3	*a	2.3	*a	2.3	*a	4.7	*a
(-12, -1)	-0.1	a	-0.9	*a	2.1	*a	3.9	*a	4.6	*a	6.1	*a
(-8, -1)	2.5	*a	3.4	*a	3.8	*a	0.9		0.5	*a	4.0	*a
(-4, -1)	2.2	***b	2.4	**b	3.7	*c	-4.0	**	-4.5	*b	-2.2	***c
(-4)	-6.0		-8.4		-3.7		-1.8		-6.4		3.5	
(-3)	-3.9	b	-4.5	b	-2.6	b	-8.2	a	-8.0	b	-8.3	b
(-2)	-1.2	c	0.9	c	-1.3	c	-7.0	c	-8.4	c	-3.2	c
(-1)	20.0	*	21.4	*	22.2	**	0.9		4.9	**	-0.8	**
t	42.5	*a	71.8	*a	25.5	*a	69.0	*a	80.6	*a	81.4	*a
(+1)	6.2	*b	13.8	*a	-0.1		18.6	*a	16.9	*b	29.6	*a
(+2)	5.6		5.4		4.3		10.2	*a	15.1	**	12.8	
(+3)	-1.8		2.2		-4.0		13.7		3.6		22.7	
(+1, +4)	2.5	*	6.3	*	-0.4	*	13.8	*a	9.8	*	23.4	*a
(+1, +8)	1.3	*	5.0	*	-0.7	*	11.3	*	6.7	**	19.9	**a
(+1, +12)	1.2	*c	4.0	*c	0.1	*c	8.0	**b	5.2	*c	13.8	**c
(+1, +20)	0.6	*a	2.3	*a	0.3	*a	6.5	**	5.5	*a	10.4	
(+1, +40)	0.9	**a	2.5	**a	0.5	**a	5.5	***	6.7	**a	6.3	

Table 7: Average Abnormal Return, Volatility, and Volume in Halt Period based on Duration

This table represents the average abnormal return, volume, and volatility of halted stocks around halts across different durations. 15min indicates the stocks that halted up to 15 minutes, 15-30 min shows the stocks that halted between 15 and 30 minutes, and so on. Last 15 min represents the halted stocks on which their trading is resumed in last fifteen minutes of day. “t”, and (+1) represent the halt interval and first interval following halt interval, respectively. (+1, +40) denotes the period between first and 40 interval following halt interval. Similarly, (-40, -1) refers the period between one interval prior to and 40 interval prior to halt interval. Each interval consists of 15 minutes.

Panel A: Average Abnormal Return

AR	15 min	15-30 min	30-60 min	> 60 min
(-40, -1)	0.9238	0.9364	1.0270	0.9862
(-20, -1)	0.9034	1.0023	0.9969	0.9931
(-12, -1)	0.9100	1.0513	1.0337	0.9690
(-8, -1)	0.8973	0.9876	1.0738	1.0243
(-4, -1)	0.8880	0.8595	0.8777	0.9997
(-4)	0.9052	0.8449	0.9028	0.6894
(-3)	0.7420	0.8854	1.0520	1.0614

(-2)	1.0106		0.8433		0.6561		1.0181	
(-1)	0.8941		0.8643		0.8998		1.2298	
t	3.6699	**a	3.1144	***	3.5111		3.9152	
(+1)	1.0646		1.0868		0.9573		1.5989	
(+2)	1.3183		1.4951		0.9504		1.1434	
(+3)	1.0413		1.1038		0.8380		0.9394	
(+1, +4)	1.0804	a	1.1683		1.0612		1.2562	
(+1, +8)	1.0312	a	1.0769		1.0439		1.1299	**c
(+1, +12)	0.9997	a	1.0438		1.0750		1.1271	*a
(+1, +20)	1.0406	**a	1.0101	a	1.0046		1.0791	a
(+1, +40)	1.0032	*a	0.9922	a	0.9777	a	1.0156	b

Panel B: Average Volatility

Volat	15 min		15-30 min		30-60 min		> 60 min	
(-40, -1)	2.3645		2.6184		2.9498		2.8488	
(-20, -1)	2.1306		3.0093		3.1325		2.7989	
(-12, -1)	2.0820		3.2716		3.8616		2.7013	
(-8, -1)	2.0569		2.7952		4.6289		3.0017	
(-4, -1)	2.1949		1.9987		1.8772		2.8587	
(-4)	1.7535		1.8124		1.9054		1.1785	
(-3)	1.5208		2.2311		2.4652		3.6756	
(-2)	3.3688		2.0352		1.1817		3.5491	
(-1)	2.1364		1.9163		1.9567		3.0317	
t	25.9239	*a	19.9133	*a	21.5236	*a	26.8305	*a
(+1)	3.4412		2.8975		2.1153		5.5505	
(+2)	5.5934		6.1357		1.9465		2.6591	
(+3)	2.7085		2.6913		1.5920		2.4486	
(+1, +4)	3.5986	*a	3.5460	*a	3.3275	*a	3.8616	*a
(+1, +8)	3.2892	*a	3.2887	*a	3.1605	*a	3.5988	*a
(+1, +12)	3.0476	*a	3.1520	*a	3.5454	*a	3.6487	*a
(+1, +20)	3.2064	*a	3.0869	*a	3.0760	*a	3.2555	*a
(+1, +40)	2.7705	*a	2.9738	*a	2.7156	*a	2.9232	*a

Panel C: Average Abnormal Volume

Abvol	15 min		15-30 min		30-60 min		> 60 min	
(-40, -1)	-5184		-2169		18474		-4412	
(-20, -1)	-5242		-1072		12498		-5289	
(-12, -1)	-8116		-9014		33200		-2282	
(-8, -1)	-12828		-15274		60729		9571	
(-4, -1)	4180		-7443		47105		7232	
(-4)	-24223		-6833		12455		19675	
(-3)	81473		7077		53672		48898	
(-2)	-32919		-27997		204420		-24747	
(-1)	-7613		-2019		-82125		-14897	
t	-13574	a	12485	a	146599		3369	c
(+1)	12296		-10244		-30845		-55812	
(+2)	8502		-33077		-6115		-37198	
(+3)	-28331		33958		13573		-18276	
(+1, +4)	-6563	a	-8616	a	-30788	a	-17346	*a
(+1, +8)	-5239	a	6927	a	2366	a	-20318	a

(+1, +12)	-4349	[a]	-13401	[a]	-4821	[a]	-19809	***[a]
(+1, +20)	-5217	[a]	-9359	[a]	-6193	[a]	-17990	**[a]
(+1, +40)	-1706	[a]	-2261	[a]	-19844	*[a]	-15736	***[a]

Table 8: Trading Behavior of Different Types of Investors around Trading Halts

Panel A shows the volume-weighted average price differences in buying and selling around halts by different types of investors. M, F, and P represent individual investors, mutual funds, and brokerage houses' own portfolios, respectively. Panel B shows the number of (same) stocks that these types of investors trade at the same intervals in halt-period. Panel C provides the total number of shares traded by M, F, and P at the same intervals in halt-period. *, **, *** denotes at the one, five and ten percent levels of significance.

Panel A: Volume-Weighted Average Price Differences

	Buy		Sell	
Period	m-f	m-p	m-f	m-p
post-4 intervals	0,001541**	0,005858*	-0,003789***	-0,002279***
pre-4 intervals	0,001901	0,001351	0,00082***	-0,001372***
post-1 interval	0,00554*	0,00274***	-0,00523**	-0,00508*
- good news	0,00595*	0,00127**	-0,0050*	-0,00815*
- bad news	0,00458*	-0,00126	-0,00513**	-0,00039
pre-1 interval	0,00176**	0,001074**	-0,002718**	-0,003446**

Panel B: Number of stocks traded

	Buy		Sell	
Period	m/p	m/f	m/p	m/f
post-4 intervals	83	64	77	77
pre-4 intervals	55	53	66	52
post-1 interval	57	34	56	56
pre-1 interval	27	20	30	24

Panel C: Volume (Total number of shares traded)

	f	m	p
post-4 intervals	262,662,000	28,952,960,000	798,728,000
pre-4 intervals	149,235,000	13,259,712,000	460,587,000
post-1 interval	101,862,000	13,550,045,000	279,525,000
pre-1 interval	63,507,000	4,017,542,000	104,933,000

Panel D: Equal-Weighted Average Price Differences

	Buy		Sell	
Period	m-f	m-p	m-f	m-p
post-4 intervals	0.00210*	0.00050	-0.00247***	-0.00300***
pre-4 intervals	0.00052	-0.00099	0.00084***	-0.00217***
post-1 interval	0.00406*	0.00181**	-0.00166	-0.00241**
- good news	0.00365*	0.00428*	-0.00145	-0.00157***
- bad news	0.00166**	0.00199**	-0.00324***	-0.00343***
pre-1 interval	0.00144	0.00395*	-0.00045	-0.00150*

Panel E:	Volume-Weighted Average Price Differences in Index-30 Stocks			
	Buy		Sell	
Period	m-f	m-p	m-f	m-p
post-4 interval	0,001511*	0,005429**	-0,003849*	-0,002223*
pre-4 interval	0,001911	0,000561	0,002084	-0,004892**
post-1 interval	0,00652*	0,00017	-0,00360**	-0,00364*
pre-1 interval	0,00176*	0,002074	-0,002718**	-0,003446*

Panel F:	Volume-Weighted Average Price Differences in Non-Index-30 Stocks			
	Buy		Sell	
Period	m-f	m-p	m-f	m-p
post-4 interval	0,00171*	0,00647*	-0,00358**	-0,00227*
pre-4 interval	0,00183**	0,00251	-0,00300**	0,00199**
post-1 interval	0,00179*	0,00364**	-0,00701*	-0,00608*
pre-1 interval	0,00166	-0,00032	-0,00248**	-0,00282***

Table 6: Results of Paired Tests: Post-Halt Period vs. Pre-Halt Period

This table reports the cross sectional mean and median differences of return, volume, and volatility of halted stocks between post-halt and pre-halt periods by using t- and sign-ranked tests. Pre and Post periods consists of same interval immediately prior to and after halt interval, respectively. For example, (+1, +40) denotes the period between first and 40 interval following halt interval. Similarly, (-40, -1) refers the period between one interval prior to and 40 interval prior to halt interval. Each interval consists of 15 minutes.*, **, *** denotes the statistical significance at t-tests, whereas a, b, and c at sign-ranked tests, at the one, five and ten percent levels, respectively.

	Return			Volume			Volatility			# of Trades		
Panel A: All Halts												
(+1, +40) vs (-40, -1)	Test Stat.	P-value		Test Stat.	P-value		Test Stat.	P-value		Test Stat.	P-value	
t-test	3.8659	0.0001	*	1.1249	0.2606		1.9106	0.0561	***	50.4197	0.0000	*
Wilcoxon / Mann-Whitney	3.4543	0.0006	a	1.8754	0.0607	c	1.7202	0.0854	c	11.3791	0.0000	a
(+1, +20) vs (-20, -1)												
t-test	2.9901	0.0028	*	0.9306	0.3521		2.8683	0.0041	*	6.3753	0.0000	*
Wilcoxon / Mann-Whitney	3.0669	0.0022	a	0.5437	0.5867		1.7558	0.0791	c	9.1389	0.0000	a
(+1, +12) vs (-12, -1)												
t-test	2.8008	0.0051	*	0.7898	0.4296		1.9265	0.0541	***	4.8002	0.0000	*
Wilcoxon / Mann-Whitney	2.5332	0.0113	a	1.0232	0.3062		0.9026	0.3667		6.9140	0.0000	a
(+1, +8) vs (-8, -1)												
t-test	2.4892	0.0128	**	0.4150	0.6782		1.5572	0.1195		4.0142	0.0001	*
Wilcoxon / Mann-Whitney	1.7885	0.0737	c	2.0578	0.0396	b	1.5966	0.1104		5.6936	0.0000	a

(+1, +4) vs (-4, -1)									
t-test	1.4249	0.1543	1.3348	0.1821	11.1886	0.0000	*	4.4678	0.0000	*
Wilcoxon / Mann-Whitney	1.5800	0.1141	0.4731	0.6361	19.7347	0.0000	a	5.2881	0.0000	a
(+1) vs (-1)									
t-test	0.1803	0.8570	0.2434	0.8078	2.1264	0.0339	**	2.0015	0.0458	**
Wilcoxon / Mann-Whitney	0.0288	0.9770	1.2059	0.2279	1.1943	0.2324		1.7262	0.0843	c

Panel B: Positive-News Initiated Halts	Return		Volume			Volatility			# of Trades		
(+1, +40) vs (-40, -1)	Test Stat.	P-value	Test Stat.	P-value		Test Stat.	P-value		Test Stat.	P-value	
t-test	0.2535	0.7999	1.7720	0.0764	***	0.1452	0.8846		9.7107	0.0000	*
Wilcoxon / Mann-Whitney	0.4513	0.6518	1.9279	0.0539	c	1.2095	0.2265		14.8169	0.0000	a
(+1, +20) vs (-20, -1)											
t-test	0.4211	0.6738	1.5856	0.1129		0.3846	0.7006		8.1339	0.0000	*
Wilcoxon / Mann-Whitney	0.4250	0.6708	0.4352	0.6634		0.5885	0.5562		11.1690	0.0000	a
(+1, +12) vs (-12, -1)											
t-test	1.6233	0.1046	1.0832	0.2788		0.2400	0.8104		5.4383	0.0000	*
Wilcoxon / Mann-Whitney	1.8411	0.0656	1.1510	0.2497		0.8605	0.3895		7.7081	0.0000	a
(+1, +8) vs (-8, -1)											
t-test	1.6507	0.0989	***	0.6743	0.5002		0.4924	0.6225		4.1713	0.0000	*
Wilcoxon / Mann-Whitney	1.3864	0.1656		1.6925	0.0906	c	0.6888	0.4909		5.5551	0.0000	a
(+1, +4) vs (-4, -1)											
t-test	1.2457	0.2132		0.4452	0.6563		1.4893	0.1367		4.3906	0.0000	*
Wilcoxon / Mann-Whitney	1.6251	0.1041		1.6925	0.0906	c	0.4955	0.6203		5.3283	0.0000	a
(+1) vs (-1)											
t-test	0.1631	0.8705		0.3935	0.6942		1.2476	0.2133		2.1810	0.0301	**
Wilcoxon / Mann-Whitney	0.4296	0.6675		0.8663	0.3863		0.0632	0.9496		1.9586	0.0502	b

Panel C: Negative-News Initiated Halts	Return			Volume		Volatility			# of Trades		
(+1, +40) vs (-40, -1)	Test Stat.	P-value		Test Stat.	P-value	Test Stat.	P-value		Test Stat.	P-value	
t-test	3.6011	0.0003	*	0.2409	0.8096	3.1600	0.0016	*	1.1049	0.2692	
Wilcoxon / Mann-Whitney	2.5356	0.0112	a	0.3772	0.7061	0.4254	0.6705		1.4232	0.1547	
(+1, +20) vs (-20, -1)											
t-test	2.9585	0.0031	*	0.4318	0.6659	3.8897	0.0001	*	0.0905	0.9279	
Wilcoxon / Mann-Whitney	2.5136	0.0120	a	0.2367	0.8129	1.5053	0.1322		1.9341	0.0531	c
(+1, +12) vs (-12, -1)											
t-test	2.2869	0.0223	**	0.0911	0.9274	2.3126	0.0208	**	0.0047	0.9962	
Wilcoxon / Mann-Whitney	1.6639	0.0961	c	0.4078	0.6834	1.2282	0.2194		1.8797	0.0602	c

(+1, +8) vs (-8, -1)										
t-test	1.7362	0.0827	***	0.3955	0.6926	2.6040	0.0093	*	0.5175	0.6049	
Wilcoxon / Mann-Whitney	1.0666	0.2862		1.4546	0.1458	2.3011	0.0214	b	2.1904	0.0285	b
(+1, +4) vs (-4, -1)										
t-test	0.9108	0.3626		1.6012	0.1097	2.6296	0.0087	*	1.1625	0.2454	
Wilcoxon / Mann-Whitney	0.7593	0.4477		0.4501	0.6526	3.6239	0.0003	a	2.0429	0.0411	b
(+1) vs (-1)										
t-test	0.8370	0.4035		0.7833	0.4343	1.4648	0.1444		0.1263	0.8996	
Wilcoxon / Mann-Whitney	0.1094	0.9129		1.1763	0.2395	2.3298	0.0198	b	0.6033	0.5463	

Panel D: Pre-1 Halts	Return			Volume			Volatility		
(+1, +40) vs (-40, -1)	Test Stat.	P-value		Test Stat.	P-value		Test Stat.	P-value	
t-test	2.7418	0.0061	*	0.5504	0.5821		1.5726	0.1159	
Wilcoxon / Mann-Whitney	1.4324	0.1520		1.0422	0.2973		1.4257	0.1540	
(+1, +20) vs (-20, -1)									
t-test	3.3492	0.0008	*	1.2479	0.2122		1.4449	0.1486	
Wilcoxon / Mann-Whitney	2.1362	0.0327	b	0.5147	0.6068		1.3703	0.1706	
(+1, +12) vs (-12, -1)									
t-test	1.7575	0.0790	***	1.2607	0.2076		1.5448	0.1226	
Wilcoxon / Mann-Whitney	0.9932	0.3206		0.4502	0.6526		2.8685	0.0041	a
(+1, +8) vs (-8, -1)									
t-test	2.1660	0.0305	**	1.7099	0.0875	***	0.9343	0.3504	
Wilcoxon / Mann-Whitney	1.0076	0.3136		1.6312	0.1028		2.3371	0.0194	b
(+1, +4) vs (-4, -1)									
t-test	1.2287	0.2197		0.4217	0.6734		3.3088	0.0010	*
Wilcoxon / Mann-Whitney	0.8389	0.4015		1.1380	0.2551		2.7050	0.0068	a
(+1) vs (-1)									
t-test	1.0387	0.3006		1.9568	0.0522	**	0.9090	0.3648	
Wilcoxon / Mann-Whitney	0.5077	0.6117		1.8357	0.0664	c	0.0488	0.9611	

Panel E: Pre-2 Halts	Return		Volume		Volatility	
(+1, +40) vs (-40, -1)	Test Stat.	P-value	Test Stat.	P-value	Test Stat.	P-value
t-test	1.2110	0.2260	0.8396	0.4012	1.2903	0.1970
Wilcoxon / Mann-Whitney	0.9706	0.3318	0.1238	0.9014	0.3863	0.6993
(+1, +20) vs (-20, -1)						
t-test	0.7461	0.4557	0.4960	0.6199	0.1180	0.9061
Wilcoxon / Mann-Whitney	0.6392	0.5227	0.6241	0.5326	0.1012	0.9194

(+1, +12) vs (-12, -1)								
t-test	0.9948	0.3201		0.3185	0.7502		0.2471	0.8049
Wilcoxon / Mann-Whitney	0.8742	0.3820		1.0467	0.2952		0.6285	0.5297
(+1, +8) vs (-8, -1)								
t-test	1.4547	0.1462		0.6479	0.5173		0.7027	0.4825
Wilcoxon / Mann-Whitney	1.2953	0.1952		1.8428	0.0654	c	0.3812	0.7031
(+1, +4) vs (-4, -1)								
t-test	0.2514	0.8017		0.5465	0.5851		0.3354	0.7375
Wilcoxon / Mann-Whitney	0.5253	0.5994		1.4377	0.1505		0.7136	0.4755
(+1) vs (-1)								
t-test	0.3554	0.7232		1.0313	0.3056		0.9243	0.3582
Wilcoxon / Mann-Whitney	0.1612	0.8719		0.2039	0.8385		0.0379	0.9697

Panel F: Intraday Halts	Return			Volume			Volatility		
(+1, +40) vs (-40, -1)	Test Stat.	P-value		Test Sta.	P-value		Test Sta.	P-value	
t-test	3.8135	0.0001	*	1.1145	0.2651		1.9741	0.0484	**
Wilcoxon / Mann-Whitney	3.9398	0.0001	a	1.7725	0.0763	c	1.4750	0.1402	
(+1, +20) vs (-20, -1)									
t-test	1.9904	0.0466	**	1.3357	0.1817		2.7288	0.0064	*
Wilcoxon / Mann-Whitney	2.8003	0.0051	a	0.0960	0.9235		1.3956	0.1628	
(+1, +12) vs (-12, -1)									
t-test	3.0310	0.0025	*	1.2319	0.2180		1.5016	0.1333	
Wilcoxon / Mann-Whitney	2.9002	0.0037	a	0.5344	0.5930		0.4139	0.6790	
(+1, +8) vs (-8, -1)									
t-test	2.6194	0.0089	*	1.3275	0.1844		1.7929	0.0731	***
Wilcoxon / Mann-Whitney	2.1437	0.0321	b	0.7430	0.4575		0.3044	0.7608	
(+1, +4) vs (-4, -1)									
t-test	1.1787	0.2387		2.1865	0.0289	**	2.4354	0.0150	**
Wilcoxon / Mann-Whitney	1.1832	0.2367		0.7197	0.4717		1.9621	0.0498	b
(+1) vs (-1)									
t-test	0.3054	0.7602		0.0618	0.9508		1.7901	0.0743	
Wilcoxon / Mann-Whitney	0.2393	0.8108		0.3169	0.7513		1.5204	0.1284	

Figure 1: Volatility around Trading Halts (Full Sample)

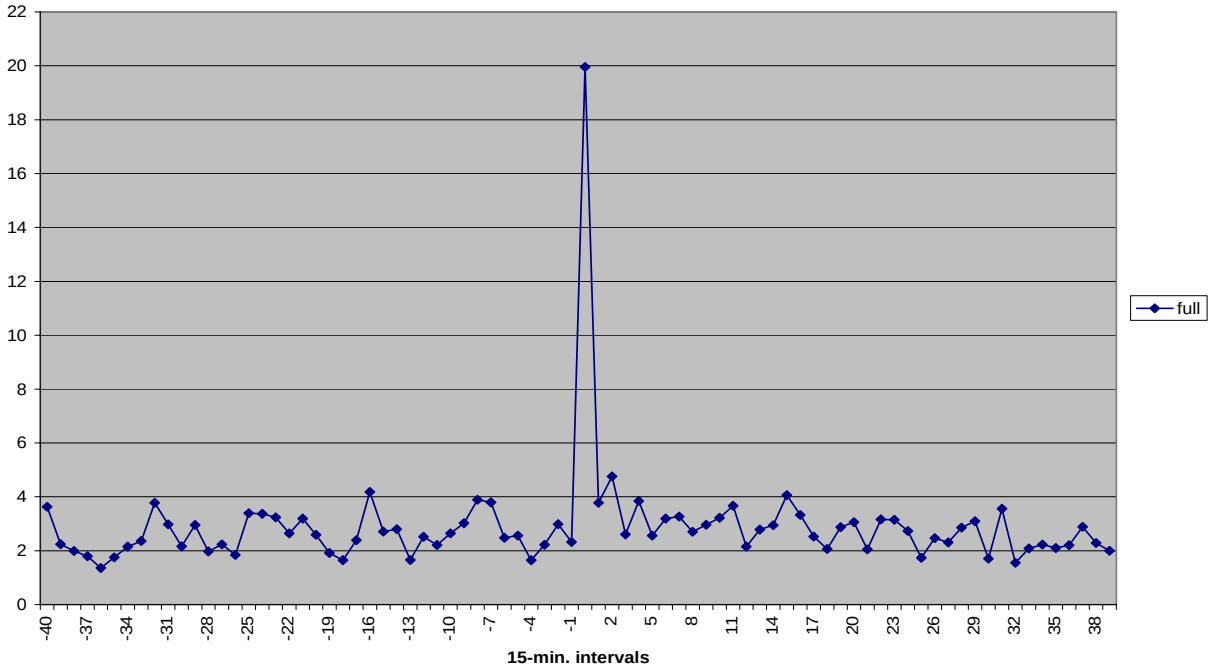

Figure 2: Volatility around Trading Halts: Good News vs Bad News

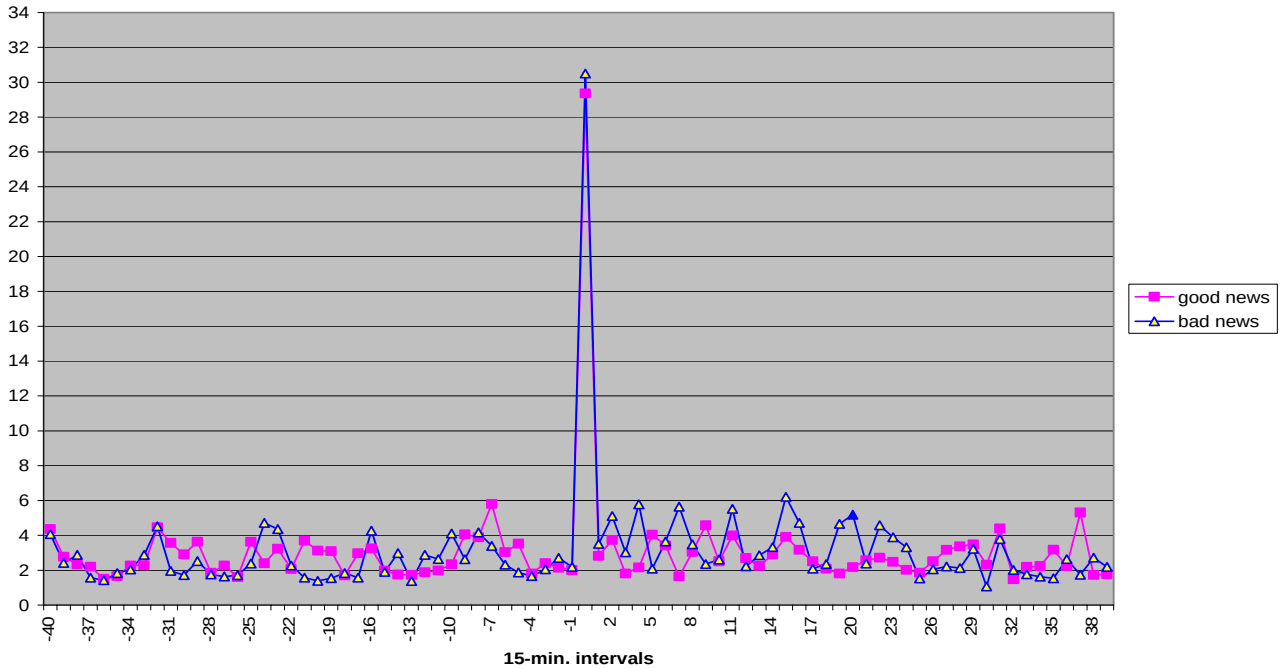

Figure 3: Cumulative Abnormal Returns around Trading Halts (%)

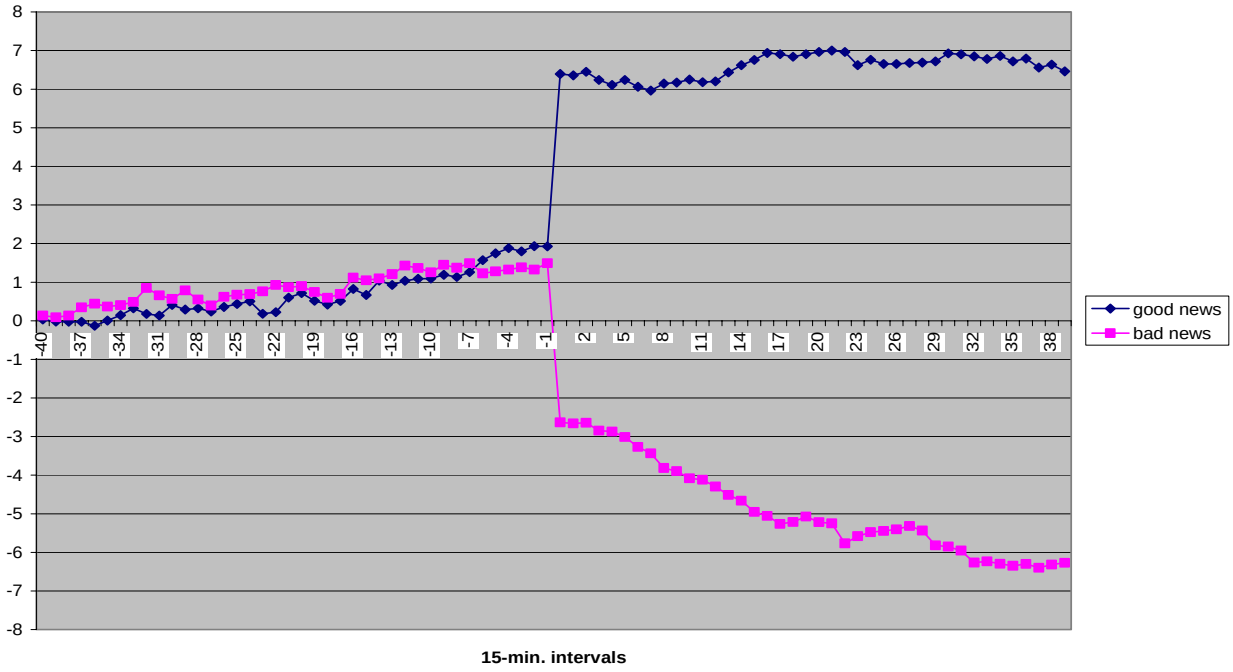

Figure 4: CARs around Trading Halts: Intaday Halts vs Pre-opening Halts (Good News)