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INVESTORS' REACTION TO THE RECOMMENDATIONS OF ANALYSTS PUBLISHED IN THE FINANCIAL POST "HOT STOCK" COLUMN

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Abstract

Investors' Reaction to the Recommendations of Analysts Published in the Financial Post "Hot Stock" Column

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A substantial amount of research has accumulated over the past twenty years in support of the semi-strong form of market efficiency theory. This theory asserts that security prices reflect all available public information. In such a market, opportunities to earn abnormal profits should not persist as prices quickly adjust to incorporate new information. Under such conditions, even if an investor possesses superior knowledge about a security and is able to use this knowledge to earn abnormal profits, prices should quickly react. Therefore, by the time this information is published in the financial press, it should not yield excess returns.

However, evidence points to the possibility of earning short-term abnormal returns by acting on buy/sell recommendations of analysts when they are published in the U.S financial newspapers and magazines, and long after they are available to analysts' clients. Using an event-study methodology, this paper found that statistically significant abnormal returns could be earned in Canada by following analysts' recommendations published in the Financial Post "Hot Stock" column. Tests of economic significance proved inconclusive.

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Introduction

What is an efficient market? Does such a market exist? If it does, what are the implications for investors? Those are among the questions that have been keeping researchers busy while causing a lot of controversy and debate. Simply put, an efficient market is a market in which prices of securities reflect their "true" value based on all available information. Prices may not reflect true value all the time. However, in an efficient market any deviation from true value is random. Therefore, no investor should be able to systematically earn abnormal profits.

Fama (1970) formalized the notion of market efficiency by breaking it down into three parts: weak-form, strong-form, and semi-strong form. The weak-form of market efficiency states that current prices reflect all past information. This implies that technical analysis is a useless pastime. Indeed, academics agree that technical analysis justifies its existence more by generating hefty commissions for brokers as well as employment opportunities for chartists rather than by providing *consistently* superior returns to its users.

The strong form of market efficiency theory asserts that stock prices reflect *all* available (even inside) information. Therefore, investors would not be able to use financial analysts' opinions and recommendations nor any other public or private information to earn abnormal profits. In this case, security research and valuation would prove to be a futile and inferior method of investing to that of simply diversifying across stocks or indexing one's portfolio.

The notion of strong form of market efficiency is considered to be an exaggeration. Most academics and financial industry professionals accept some degree of market inefficiency. Even Malkiel (1996) whose enthusiastic support of index funds is well known, admitted the strong form of the theory to be unrealistic and exaggerated. Fama concurred that "...it is obviously an extreme null hypothesis...and like any other extreme null hypothesis, we do not expect it to be literally true".[1]

During the past twenty years a lot of debate and empirical research has concentrated on the semi-strong form of market efficiency theory. Unlike the strong form of the market efficiency theory, the semi-strong version accepts the possibility that analysts' recommendations that are based on privileged information could result in abnormal returns. The semi-strong form of the theory predicts however, that as soon as this information is available to analysts' clients, those clients would quickly try to profit from it.

Under these conditions, only those investors who were the first to act on new information could earn excess returns as prices would instantly adjust to reflect this information. Thus, the opportunity to earn abnormal profits would be quickly eliminated. Therefore, by the time information reaches the popular press, the opportunities leading to abnormal returns should not exist.

Since there is U.S.-based statistically and economically significant empirical evidence claiming otherwise, I propose to investigate whether or not similar opportunities to earn abnormal returns by following financial newspapers'

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[1] Fama, E, "Efficient Capital Markets: A Review of Theory and Empirical Work," The Journal of Finance 25.2 (1970): 388.

advice exist in Canada. Specifically, the following question is to be addressed. Can immediate as well as long-term abnormal profits be realized by acting on buy/sell recommendations of analysts when they are published in the Canadian financial press?

The first section discusses the possibility of earning abnormal returns by following analysts' recommendations as soon as they are available to market participants. Specifically, I present some empirical evidence as well as a number of theoretical arguments which show that analysts' recommendations may be useful after all, and therefore deserve the empirical attention they got over the years.

The following section asks whether those recommendations could still produce excess returns when they are published in the popular press and long after they are available to analysts' clients. The third section discusses the event-study methodology. The fourth section explains the sample selection procedure and the data utilized. The fifth and sixth sections discuss the short-term and long-term results respectively. The latter section also elaborates on the methodology used in the long-term analysis. The last section presents the conclusions.

It was documented by Brown and Warner (1985), Boehmer et. al. (1991), Graham et. al. (1996) and Brown et. al. (1988, 1993) that stock returns become more volatile during the event period. If this increase in volatility is not fully accounted for, we risk under-estimating the standard error of the test statistic. This in turn, would lead to an inflated test statistic followed by a false rejection of the null hypothesis of zero abnormal returns. In other words, it

could be *erroneously* concluded that abnormal profits would be realized by acting on buy/sell recommendations of analysts when they were published in the Canadian financial press.

Since past research did not fully account for the volatility increase, I remedy this situation by first performing the standard event-study analysis as it is usually conducted in studies of this nature. I later implement the correction procedure whereby the initial test statistic is standardized by the cross sectional standard deviation of the standardized abnormal returns. Then I examine the difference (if any) in the results.

Most of the event studies dealing with second-hand information used a single index as a proxy for the market. Roll (1978) argued that abnormal performance estimates may be sensitive to the benchmark selected to represent the market since the values of regression coefficients could vary depending on the market proxy that was chosen.

Aiming to detect any inconsistencies in the findings associated with the selection of a benchmark portfolio, I replicate the test using three different indices as follows: TSE 300 composite index, Canadian Financial Markets Research Center (CFMRC) equally weighted index of all Canadian based equities trading on TSE, and a value weighted version of the CFMRC index.[2]

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[2] The data was obtained from the TSE-Western CD-ROM. In comparison to the TSE 300, the CFMRC index is broader for it includes *all* the Canadian based common stocks which trade on the TSE and are available in this database.

Market Efficiency: Myth Or Reality?

Why would anyone pay for the services of a security analyst if prices reflect all information? Besides the intuitively plausible argument that security analysts exploit certain economies of scale which result in lower costs of obtaining information, there are a number of other possible explanations. Consistent with the above discussion, those explanations imply that markets are not fully efficient.

Prices Do Not Reflect All Information

First, prices may reflect only publicly available information. Therefore, analysts may have access to privileged information which prices do not fully reflect.

Grossman and Stiglitz (1976, 1980) extended the research of Fama by arguing that costless information is not only a *sufficient* condition for the strong form of the efficient market theory to hold but a *necessary* one. Since information is not costless, there are two types of investors: those who are informed and those who are not informed. If prices are to reflect all information, they have to *fully* reflect the information of the informed investors. In that case we would have an equilibrium condition consistent with the strong-form of the market efficiency theory.

The authors argued that this is highly unlikely because in this case some informed investors would not be compensated for the cost of acquiring

information and thus, would have no incentive to seek it. Therefore, Grossman and Stiglitz asserted that markets could not be strong-form efficient.

The analysis of Grossman and Stiglitz also implies that the number of the informed investors is insufficient for the strong-form of market efficiency due to the high cost associated with becoming fully informed. This possibility is consistent with Fama who agreed that a "sufficient" number of investors should posses *all* available information for the market to be fully efficient. It is also possible that informed investors are reluctant to assume excessive positions in order to completely eliminate arbitrage opportunities. Furthermore, the quality of information varies. Thus, the degree to which prices convey information would vary as well.

Possible Investor Irrationality

A controversial argument against market efficiency is that investors are irrational. Three important studies of DeBondt and Thaler (1985, 1987) and Lehmann (1990) showed that stock returns were mean reverting. The findings of their papers implied that investors over-react to new information and ignore long-term trends. This leads to reversion to the mean which turns the average "winner" into a "loser" and vice versa.

Other studies such as Ikenberry, Rankine, and Stice (1996) as well as Ikenberry, Lakonishok, and Vermaelen (1995) reported investor under-reaction. The first study examined 1,275 split announcements between 1975-1990. The authors observed long-term market under-reaction to splits. The second study documented abnormal returns occurring even four years after open market share repurchases. It suggested that the market ignores or

alternatively, takes a very long time to fully absorb information conveyed by share repurchases. Open market repurchases usually reflect management's belief that company's stock could be bought at bargain prices.

Behavioral finance experts tried over the years to go beyond the existing utility theory in their efforts to gain better insight into peoples' investment decision making processes. Tversky and Kahneman (1974) for example, asserted that people's reaction to new information may sometimes lead to judgment errors which could result in poor decision-making. This is partially caused by a human tendency to over-react to new information pertaining to a certain event and neglect the basic underlying probabilities that correspond to this event.

They gave an example of an experiment consisting of a sample of 100 professionals. Seventy percent of the professionals were lawyers and the remaining thirty percent were engineers. The subjects were shown a few descriptions allegedly drawn from the sample in a random fashion. They were asked to state the probability that those descriptions belonged to engineers and lawyers. The subjects relied more on stereotypes rather than on the given probabilities of 0.7 and 0.3. When they were not shown any descriptions, their answers were correct.

Black (1986) was consistent with these results when he stated that traders often act on noise which they confuse with information. That happens because there is so much noise that people are often unable to distinguish between it and valuable information.

People also have a tendency to incorrectly interpret a random process. Tversky and Kahneman demonstrated in a controlled experiment that when we toss a perfectly balanced coin seven times and come-up with heads, we tend to believe that the next toss is likely to be tails. Our desire to see perpetual order in everything causes us to develop "subjective probabilities" which ultimately lead to errors.

The above discussion highlighted the possibility of investor irrationality. However, Fama (1997) asserted that as long as this seeming irrationality was random, it did not contradict the theory of market efficiency. In other words, as long as under-reaction was as likely as over-reaction, market efficiency could not be refuted. Furthermore, Fama (1991) argued that the so called "anomalies" which contradicted the market efficiency theory were inevitable due to the variety of data as well as the methodologies utilized in the studies. Thus, Fama downplayed the importance of the anomalies and challenged the critics of the efficient markets' theory to present a better model of price formation.

Professional Investment Advise And Investors' Utility Function

The last explanation is somewhat unusual. Having a broker and actively following the market might be considered as a consumption rather than an investment decision. In this case, even if analysts' recommendations do not produce superior returns, their services would still be in demand. It might be very important to some people to be able to quote the closing value of TSE 300 at a cocktail party, as well as mention how much they earned over the past week (a few would mention their losses). Thus, the value for such an investor

lies not only in the quality of the service provided by security-analyst, but also in the existence of the service itself.

The Need For Financial Analysts: Empirical Findings

A substantial number of studies attempted over the years to determine whether or not analysts' recommendations justified their existence. Dating back to Cowles (1933) there has been an ongoing debate regarding the utility of financial forecasts. Marks (1993) for example, in a short and yet informative note to the "Financial Analysts Journal" argued against excessive confidence in financial forecasts. He claimed that excess returns are possible by following only non-consensus forecasts since a forecast which is accepted by the market is already reflected in stock prices.

Logue and Tuttle (1973) are among those who supported the notion of market efficiency during the 1970's as their findings indicated that it was not possible to earn abnormal profits from analysts' recommendations. Copeland and Mayers (1982) investigated the performance of the Value Line Investment Survey recommendations between 1965 and 1978. They found that abnormal returns could be realized by following the recommendations of the Value Line. However, they were quick to downplay their findings claiming that abnormal profits would not be economically significant.[3]

Bjerring et. al. (1983) tested the value of the recommendations provided by a regional Canadian money management and investment service company (the name of the company was not disclosed in the study) between 1977-1981 and found support for the conclusions of Copeland and Mayers (1982), that at least

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[3] The authors assumed two percent transaction costs for a "round trip".

some members of the financial services community made the market more efficient by providing valuable information to their customers.

Guo et. al. (1995) suggested that many companies have an incentive to "encourage" analysts to deflate their earnings projections while maintaining their "buy" recommendations, thus causing the market to react favorably when the actual earnings are announced.

Furthermore, they implied that it may be also in analysts' interests to underestimate the earnings potential of firms since in this case investors' profits would be more than they expected. If the analyst over-estimated the earnings on the other hand, the market would react negatively and the analyst's career could be hurt in the long run.

This line of reasoning is similar to Beatty and Ritter (1986) who argued that it is in the investment bankers' interest to under-price IPOs. Given the fact that investment bankers have a "non-salvageable reputation capital" at stake, they are left with no choice but to offer investors a *good* price to encourage them to overcome the uncertainty associated with the unseasoned issue. If investor bankers did not under-price a particular issue enough, they would risk losing investors' business as well as their corporate clients because insufficient under-pricing may not enable the sale of the whole issue in the market. If on the other hand, they excessively under-price the issue, they risk their corporate market share as well.

Guo et. al. found that company insiders such as chairmen, directors, and managers were able to recognize when the earnings forecasts published by

analysts were biased downward and engaged in trading activities leading to abnormal profits when the actual earnings were announced. The fact that those trading activities failed to eliminate the upward movement of the stock price associated with forecast error during the earnings' announcement implied that the number of insiders was very small and/or they were reluctant or unable to assume excessive positions in those trades.

Financial Press And Abnormal Returns: Implications
For Semi-Strong Form Of Market Efficiency

Assume that the market is not completely efficient. Also, assume that a particular analyst identifies a mispriced security and immediately provides this information to his client. Then, according to the semi-strong form of market efficiency, prices would quickly adjust, and by the time this information is published in the financial newspaper, it should not be possible to earn excess returns by acting on it.

Sant and Mir (1996) suggested that financial analysts anticipate investors' overreaction following their public recommendations, and deliberately discuss a particular stock in a public forum after they advise their best clients who are then able to capitalize on the market reaction. Analysts have no incentive to release *valuable* information to the public at no cost. Why then, should the market react in the first place since this information is not likely to be valuable? As mentioned, one possible explanation is investor irrationality that causes this overreaction.

Value Embedded In Secondary Information?

There were thirteen studies conducted over the past twenty years which questioned the value embedded in secondary information. Utilizing the standard event-study methodology those studies looked at the stock price reaction to the buy/sell recommendations published in the financial press. Those recommendations were usually solicited from financial analysts by

journalists who wrote regular newspaper columns in which different companies were periodically assessed as to their stocks' investment potential.

Three of those studies analyzed price reaction to the buy/sell recommendations published in the Business Week column called "Inside Wall Street" (IWS). Seven studies involved the Wall Street Journal column "Heard on the Street" (HOTS). Two studies analyzed the price reaction to the buy/sell recommendations of the monthly "Dartboard" column published in the Wall Street Journal. Finally, one study looked at whether the weekly television programme called "Wall Street Week" with Louis Rukeyser provided abnormal profits to those who traded on the recommendations given by program's guests. Eleven of those studies are summarized in Table 1 in a chronological order and are discussed next.

The very first paper was published by Davies and Canes (1978) who examined the reaction of stock prices which were published in the Wall Street Journal column "Heard on the Street" (HOTS) to recommendations or critiques of analysts. This information was already available to many market participants who subscribed to financial services.

Surprisingly, there were statistically significant average daily abnormal returns (AAR) associated with buying stocks one day prior to the designated event day (publication of the newspaper), the event day itself, and also up to two days after the event. In the case of sell recommendations, abnormal returns could have been realized by short-selling the stock on the event day as well as the following day.

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Table 1

Summary of the Results of Studies Pertaining to Secondary Information.
All the Studies Utilized the Standard Event-Study Methodology.

BUY RECOMMENDATION

Day	Davies and Canes(1978) AAR(%)	Pari (1987) AAR(%)	Liu et. al. (1990) AAR(%)	Beneish (1991) AAR(%)	Liu and Smith(1992) AAR(%)	Huth and Maris(1992) AAR(%)	Barber and Loeffler(1993) AAR(%)	Wright (1994) AAR(%)	Palmon et. al. (1994) AAR(%)	Bauman et. al. (1995) AAR(%)	Mathur and Waheed(1995) AAR(%)
-5	0.06	0.04	-0.04	na	0.18	**0.41	0.34	na	0.19	0.31	na
-4	0.07	0.01	0.11	na	0.06	0.27	0.30	0.19	0.27	0.02	na
-3	0.08	0.00	0.16	na	-0.01	-0.11	0.02	0.14	0.00	**0.36	0.05
-2	-0.02	0.09	***0.68	***0.34	0.18	0.30	-0.16	-0.13	0.28	**0.36	0.21
-1	***0.28	-0.05	***0.59	***0.35	***0.59	0.30	-0.12	0.10	***0.84	***0.47	***0.64
0	***0.92	***0.66	***1.54	***1.01	***1.09	***0.62	***3.53	***3.73	***1.91	***0.84	***1.71
1	**0.21	-0.15	***0.24	0.21	***0.40	0.24	***0.53	**0.75	***0.51	0.20	***0.28
2	**0.19	-0.01	-0.01	na	na	0.15	0.03	0.06	-0.06	-0.11	0.24
3	-0.05	**-0.28	-0.10	na	na	0.22	-0.09	-0.06	-0.17	***-0.59	0.05
4	0.06	-0.08	-0.03	na	na	*-0.36	**-0.47	-0.29	0.12	-0.27	na
5	-0.08	-0.13	-0.04	na	na	-0.13	-0.22	-0.26	-0.09	***-0.48	na

*The null hypothesis of zero abnormal returns is rejected at 10-percent level.
**The null hypothesis of zero abnormal returns is rejected at 5-percent level.
***The null hypothesis of zero abnormal returns is rejected at 1-percent level.
AAR-average daily abnormal returns.

Table 1 Continued

SELL RECOMMENDATION

Summary of the Results of Studies Pertaining to Secondary Information.
All the Studies Utilized the Standard Event-Study Methodology.

Day	Davies and Canes(1978) AAR(%)	Liu et. al. (1990) AAR(%)	Beneish (1991) AAR(%)	Liu and Smith(1992) AAR(%)	Huth and Maris(1992) AAR(%)	Palmon et. al. (1994) AAR(%)	Bauman et. al. (1995) AAR(%)
-5	-0.15	-0.10	na	0.15	-0.59	0.18	0.06
-4	0.40	0.10	na	0.27	0.67	-0.37	-0.13
-3	0.33	0.03	na	-0.10	*-0.90	-0.33	0.04
-2	0.02	***-0.62	***-0.69	***-0.34	0.43	-0.07	-0.03
-1	-0.01	***-1.03	***-0.74	***-0.97	-0.46	-0.43	-0.18
0	***-2.37	***-1.99	***-1.00	***-1.53	***-4.92	*-0.67	**-0.55
1	**-0.55	-0.14	**-0.44	-0.19	0.71	**-1.09	0.15
2	-2.93	-0.19	na	na	***1.39	0.39	0.06
3	0.01	0.05	na	na	-0.01	-0.31	0.18
4	0.09	-0.05	na	na	-0.59	-0.41	0.24
5	-0.22	0.13	na	na	0.05	-0.24	**-0.47

*The null hypothesis of zero abnormal returns is rejected at 10-percent level.
**The null hypothesis of zero abnormal returns is rejected at 5-percent level.
***The null hypothesis of zero abnormal returns is rejected at 1-percent level.
AAR-average daily abnormal returns.

However, after considering transaction costs, the authors rejected the possibility of earning economically significant abnormal profits based on the information published in HOTS.

Furthermore, they found a tendency for the returns to reverse their direction during the eighteen days after the event day. This early evidence suggests that the initial price reaction was primarily due to price pressure created by naive investors who blindly follow financial advice (herding).

Pari (1987) tested whether the weekly television programme called "Wall Street Week" with Louis Rukeyser provided valuable stock picks in the short-term as well as the long-term of six and twelve months. The abnormal returns were significant on the event-day for the 1983-1984 buy recommendations. They also exhibited some reversal later implying that the initial price pressure associated with herding was offset by the selling of the sophisticated market participants. During the post-event period of six and twelve months the abnormal returns were not statistically significant. Pari did not test the economic significance of his results.

In 1984 a big scandal erupted in regard to the HOTS column. Foster Winans, who was the author of the column at the time, leaked sensitive information to a number of traders prior to its publication in the column. They made $900,000 in trades based on this information and eventually, were convicted of fraud.

Liu et. al. (1990) and Liu and Smith (1992) examined the possibility of earning statistically significant abnormal profits by acting on the information in the HOTS column before and after the scandal. Both studies validated the results

obtained previously by Davies and Canes, although their economic significance was not examined.

Beneish (1991), Bauman et. al. (1995), and Huth and Maris (1992) provided additional support to the studies mentioned above. They confirmed that it was possible to earn statistically significant abnormal returns by acting on the buy/sell recommendations of the column. When transactions costs were considered however, the results were not deemed to be economically significant in either of the three studies.

Huth and Maris further asserted that despite the fact that in their study, the magnitude of abnormal returns on the event day for the sell sample appeared to be economically significant (-4.92%), investors would not be able to profit from short-selling. The authors argued that stock prices could change between the last trade of the previous day and the first trade during the following morining. Indeed, Specialists on the TSE for example, establish the highest bid price and the lowest ask price every morning at about seven o'clock, and then decide on the opening trading price which may differ from the previous day's closing price.[4]

Huth and Maris also investigated the presence of a small firm effect while Bauman et. al. tested the possibility of earning abnormal returns in the longer term during the post-event period. A small firm effect was apparent only in negative recommendations of the analysts, while the results of Bauman et. al. indicated that the stocks selected on the basis of the column's buy/sell recommendations out-performed/under-performed the market by 4.61% and

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[4] The Canadian Securities Institute. The Canadian Securities Course. (1992): 282.

-2.57% after adjusting for risk during the six months following the event day. Similar results were also reported for the twelve month period.

Barber and Loeffler (1993) as well as Wright (1994) tested daily stock price reactions to the regular "dartboard" contest initiated in 1988 by WSJ. In this column, four financial analysts chosen by WSJ selected one stock each. The performance of those selections was later compared against random picks of the newspaper staff. The data of the two studies was almost identical covering the period between 1988-1990.

Both studies indicated that on the event-day the experts' stock picks earned positive abnormal returns of 3.53% and 3.73% respectively. This trend was reversed in large part during the post-event period implying a "price pressure" rather than an "information" reason for this behavior. None of the two studies tested economic significance of the results.

Palmon et. al. (1994) and Mathur and Waheed (1995) conducted studies involving a Business Week column (IWS). The latter paper was motivated in part by a scandal involving insider trading. John Lynch *was* a production supervisor for a company that typesets the pages of Business Week. He made close to thirty thousand dollars by initiating trades using information that was supposed to be published in the IWS column. The results of both studies supported the notion of speculative value to be found in short-term secondary information. Both studies acknowledged the possibility of earning abnormal returns net of transactions costs by following advice published in IWS Business Week column.

Furthermore, Mathur and Waheed also investigated the possibility of earning long-term abnormal returns during the post-event period. The results however, not only failed to produce abnormal returns which was congruent with the results of Pari (1987) and Wright (1994), but were significantly negative. This implied investor over-reaction and suggested that the results obtained by Bauman et. al. (1995) were sample specific and could not be generalized (at least not in the context of secondary information).

Sant and Zaman (1996) used a large IWS data set (1976-1988) and addressed the same issue (i.e. possibility of earning short-term and long-term profits by following the advice published in a financial column). They found that the abnormal short-term returns earned were a function of the number of analysts following a particular stock (omitted from Table 1). Specifically, they found a negative relationship between the number of analysts that followed a stock and the magnitude of short-term abnormal returns that could be earned from that stock.

Also, stocks that were followed by more than twenty analysts did not exhibit any abnormal returns. The authors asserted that information about well-researched firms was widely available and thus, they were more efficiently priced. However, in an efficient market prices should *quickly* adjust to new information. As well, returns should not exhibit reversion.

Sant and Zaman found that during the six months of the post-event period prices reverted to the extent that the short-term abnormal returns earned previously were eliminated. Those results support the "investor overreaction" theory proposed by DeBondt and others. Furthermore, stocks that were

followed by five analysts and less exhibited a decline of 12.2% (significant at 5%), and stocks that were followed by more than twenty analysts declined only by 1.76%.

All of the eleven studies summarized in Table 1 supported the possibility of earning statistically significant short-term abnormal returns. While four studies rejected the possibility of earning excess profits net of transactions costs, two studies supported it. Finally, five studies did not explicitly consider transactions costs.

To summarize, it appears that the HOTS column could not yield excess returns net of transactions costs, whereas the ISW column could. Economic significance of the "dartboard" column was not tested. It is possible that investors do not take the information in the HOTS column as seriously. By the virtue of its title, this column may not be seen by investors as credible enough to bet one's money on it. On the other hand, the other two columns, particularly the "dartboard" column which hosts expert stock pickers may be perceived by investors as a source of valuable information. Indeed, Wright found that when a winner from the previous contest was invited back to the panel to select another stock, the magnitude of his abnormal returns was twice that of other panel members. The fact that most of the abnormal return of the expert panel is retracted during the thirty-nine trading days following the event implies market overreaction.

Overall, the above evidence casts doubts on the notion of semi-strong form of market efficiency in the U.S market. The next section presents the methodology of my study.

Methodology

The Market Model

The following ordinary least squares (OLS) regression is used in this study:

$$\tilde{R}_{jt} = \alpha_j + \beta_j \tilde{R}_{mt} + \tilde{\varepsilon}_{jt} \tag{1}$$

This method is called a market model method and it employs test statistics developed by Patell (1976) that became very popular in event studies and are described below.[5] Those tests have been especially popular over the years in studies concerning second-hand information.

Abnormal returns on any given day during the event period are calculated as follows:

$$AR_{je} = R_{je} - (\hat{\alpha}_j + \hat{\beta}_j R_{me}) \tag{2}$$

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[5] An important consideration when conducting an event study is the potential existence of non-synchronous trading which could bias the estimated coefficients. The following studies unsuccessfully tried to account for that potential bias utilizing methods such as those of Scholes and Williams (1977) as well as Dimson (1979): Brown and Warner (1985), Dyckman et al (1984), Liu et al (1990), Bjerring et al (1983), Barber and Loeffler (1993), Peterson (1987), Bartholdy and Riding (1994), and Pari (1987) and finally Fowler, Rorke and Jog (1980). The last study tested Scholes-Williams and Dimson methods using TSE data and found the Scholes-Williams method to be inefficient due to the large variance of the estimation.

Since the hypothesis that Scholes-Williams and Dimson methods significantly improve the coefficient estimates has been repeatedly rejected in all of the above nine studies, and since the trading frequencies in Canada have increased over the past twenty years, I do not adjust my study for non-synchronous trading.

The standardized abnormal return is

$$SAR_{je} = \frac{AR_{je}}{S\left(AR_{je}\right)}$$

(3)

The residual standard deviation $\hat{S}_j$ for security j is obtained from the market model regression. It has to be adjusted since it is estimated outside the event period.[6]

$$S\left(AR_{je}\right) = \hat{S}_j \times \sqrt{\left[1 + \frac{1}{250} + \frac{\left(R_{me} - \overline{R}_m\right)^2}{\sum_{t=-270}^{-21}\left(R_{mt} - \overline{R}_m\right)^2}\right]}$$

(4)

The standardized average abnormal returns is

$$\overline{SAR_t} = \frac{1}{N}\sum_{j=1}^{N} SAR_{jt}$$

(5)

The t-statistic is as follows[7]:

$$t = \sqrt{N} \times \overline{SAR_e}$$

(6)

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[6] See Gujarati Damodar N, <u>Basic Econometrics</u> McGraw-Hill Inc. Third edition (1995) pp 138.

[7] The original Patell (1976) test statistic is as follows: $T(t,t) = \left[\sqrt{\sum_{j=1}^{N}\frac{\left(T_j - 2\right)}{\left(T_j - 4\right)}}\right] \times \overline{SAR_t}$

where T_j is the number of days in the estimation period for stock j. Brown and Warner (1985) modified it because if the estimation period is long enough, we could say that:

$$\sum_{j=1}^{N}\frac{\left(T_j - 2\right)}{\left(T_j - 4\right)} \approx N$$

The average daily abnormal return for N securities is

$$AAR_e = \frac{1}{N} \sum_{j=1}^{N} AR_{je}$$

(7)

The cumulative average abnormal return between E_1 and E_2 is

$$ACAR_{E1,E2} = \sum_{t=E1}^{E2} AAR_e$$

(8)

The standardized cumulative abnormal return is

$$SCAR_j = \sum_{t=E1}^{E2} \frac{SAR_{je}}{\sqrt{(E2 - E1 + 1)}}$$

(9)

The standardized cumulative average abnormal return is

$$\overline{SCAR} = \frac{1}{N} \sum_{j=1}^{N} SCAR_j$$

(10)

Finally, the corresponding t-statistic is

$$t = \overline{SCAR} \times \sqrt{N}$$

(11)

Variance Shifts

The above model is subject to certain assumptions such as error term normality. The formal description is as follows:[8]

$$\tilde{\varepsilon}_{jt} \sim NID(0, \sigma^2) \tag{12}$$

A corresponding set of assumptions applies during the event period and can be expressed in a similar manner:

$$AR_{jt} \sim NID(0, S_{jt}^2) \tag{13}$$

$$cov(AR_{jt}, AR_{it}) = 0 \quad i \neq j \tag{14}$$

Brown et. al. (1988, 1993) suggest that a variety of different events may cause temporary changes in risk/return characteristics of securities. Those changes would be manifested via an increase in the variance of abnormal returns during the event period. They assert that those variance increases are due to shifts in securities' systematic risks and are positively correlated with stock returns. They further assert that a large proportion of documented abnormal returns can be directly attributed to increased volatility surrounding the event day.

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[8] One of the possible problems associated with non-normality of the error terms is inefficiency of the coefficient estimates. To remedy this problem researchers tested other estimation methods. Sharpe (1971) for example, examined whether the Mean Absolute Deviation (MAD) method is more efficient than OLS. MAD mitigates the influence of outliers on the regression because the error terms are not squared and thus, are weighted equally. Using thirty stocks that comprised the Dow Jones Industrial Average and thirty open-end mutual funds, Sharpe compared the results of OLS and MAD. The results failed to give a clear preference to MAD. Cornell and Dietrich (1978) reached the same conclusions.

Similarly, Brown and Warner (1985) concluded that non-normality of both the error terms as well as abnormal returns had no significant impact on the event study methodology. They found that the Central Limit Theorem applied to the sample size of 50 and up. Although, they rejected misspesification, a cautious interpretation of test statistics for smaller samples was suggested.

While I do not explore the reasons behind variance increases, the main methodological concern of my paper is the lack of full accounting for those shifts during the event period which could lead to unjustified rejection of the null hypothesis of zero abnormal returns. Event-period variance shifts were not fully accounted for in the studies I reviewed. It is likely that this fact boosted the statistical significance of documented abnormal returns.

Brown and Warner (1985) conducted a simulation whereby they doubled each security's variance on the event day. They discovered that the rejection rate of the null hypothesis tripled. The implications of those findings point to a real possibility of detecting abnormal returns that do not exist if variance increases during the event-period are not accounted for.

Brown and Warner proposed a sample partition (as will be done here) and suggested more research on this issue. They also mentioned the possible use of a cross-sectional variance estimation method as a remedial procedure instead of the one depicted in equation 4 above. The calculation is as follows:

$$S(AR_e) = \sqrt{\sum_{j=1}^{N} \frac{\left(AR_{je} - \overline{AR_e}\right)^2}{N-1}} \qquad (15)$$

They pointed however, that the procedure would be misspecified in cases of a non-parallel variance shift across the sample. Since each company has its own characteristics in terms of industry, size, cash flows, capital structure and the structure of the board of directors, parallel variance shift seems like a strong assumption. Furthermore, even if there is no significant increase in the cross-

sectional dispersion of abnormal returns, the power of the test statistic using the above method of variance estimation would be reduced because OLS standard errors from the estimation period were not used.

Boehmer et. al. (1991) proposed a solution to this problem.[9] They suggested the following test procedure which is a combination of the popular revised Patell (1976) method and the cross-sectional method. Thus, the past as well as the present information is used in calculating the test statistic.

$$
t = \frac{\sqrt{N} \times \overline{SAR_e}}{\sqrt{\sum_{j=1}^{N} \frac{\left(SAR_{je} - \overline{SAR_e}\right)^2}{N-1}}}
\tag{16}
$$

This test statistic is an extended version of the one seen in equation (6) above whereby the former statistic is standardized by the cross sectional standard deviation of the standardized abnormal returns. It is argued by Boehmer et. al. that this procedure properly accounts for the variance shifts.

Boehmer et. al. tested this proposition and their results clearly indicated the superiority of their standardized cross-sectional technique. Graham et. al. (1996) performed additional simulations and also reached the same conclusions.

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[9] Incidentally, Stephen Brown was the referee of this paper and both he and Jerold Warner provided a number of valuable suggestions for improvements, as was mentioned by the authors of the study.

Data and Sample Selection Procedure

With that in mind and using *both* the standard event-study methodology as well as the improved test statistic of Boehmer et. al. which accounts for parallel shifts as well as the possibility of variance heteroscedasticity of abnormal returns, I test whether short-term abnormal returns could be earned by acting on the buy/sell recommendation published in the Financial Post's regular column called "Hot Stock" (HT). In addition, my analysis is replicated three times using three different indices representing the market since market model results may be sensitive to the choice of the market proxy.

The column was initiated on May 1994. It is a daily column in which financial analysts express their opinions about different companies as well as suggest a course of action (buy, sell or hold). A sample of a typical article published in the column can be seen in Appendix 1. Financial Post has a readership similar to the Wall Street Journal and the Business Week. It is regarded by investors as a valuable information source of financial news. The hypothesis to be tested is as follows:

H1: Short-term abnormal returns cannot be earned by acting on the buy/sell recommendations published in the (HT) column.

Four hundred and twenty-three articles published by the column between May 1994-1996 are reviewed on the library microfilm and three hundred and twelve stocks trading on the Toronto Stock Exchange are initially selected to represent the sample. Stocks that are not traded on TSE are excluded from the

sample. Following the classification method of Liu et. al. (1992) stocks are categorized as buy, sell, and undecided. The last category includes those instances in which stocks have mixed reviews and there do not seem to be any clear recommendations.

Companies that have missing observations exceeding one-third of total estimation period observations, and those companies that are published by the column on Saturdays are excluded from my sample. By excluding the latter, I avoid potential methodological problems due to the event day uncertainty since the markets are closed on the weekend. Those companies that have missing observations during the event-period are also excluded. The final sample consists of 179 companies.

I expect to have a substantially larger number of buy recommendations as opposed to sell recommendations since analysts may be reluctant to issue sell recommendations because they do not want to jeopardize relations with the managers of the company. Managers represent a valuable source of information as well as investment banking business. Also the name of the column (Hot Stock) implies that those stocks that are more likely to get buy recommendations would be published. The final sample consists of 126 buy recommendations, 10 sell recommendations, and 43 undecided companies.

The calendar time is converted to event time by choosing the date of publication of the column to be the event date 0. The time line of the study can be seen in figure 1. It is similar to the time line employed by Liu et al.

Figure 1

The Time Line of the Study
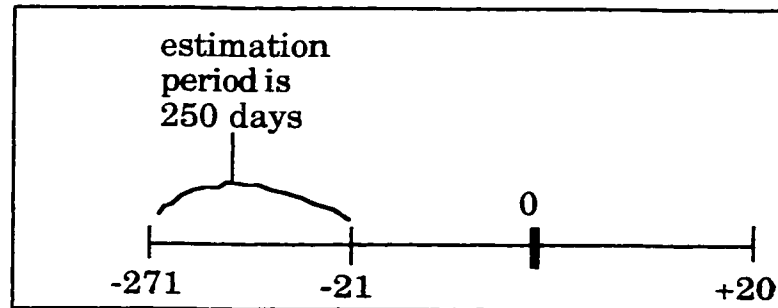
Empirical Results

Alpha and beta are found by regressing the daily returns of a given stock over the market returns represented by three different indices during the same estimation period: the TSE 300 composite index, CFMRC equally weighted index of all Canadian based equities trading on TSE, and a value weighted version of the CFMRC index. Individual stock returns as well as index data are provided by the Canadian Financial Markets Research Center (TSE-Western CD-ROM). All values are fully adjusted to reflect dividends and stock splits.

Table 2 shows the average regression coefficients and goodness of fit for the three portfolios. It can be seen that the goodness of fit as well as the values of the regression coefficients are positively associated with the sample size. It is also apparent that those coefficients that were derived using the TSE-300 composite index have the smallest values while those derived using the CFMRC-value weighted index have the highest values. The average beta and R-squared for the buy sample are approximately one and ten percent respectively.

Table 2
Summary of Regression Statistics

	Alpha	Beta	R-squared
SELL PORTFOLIO (N=10)			
TSE-300 composite	4.40E-03	0.48	4.00%
CFMRC-value weighted	4.30E-03	0.53	3.60%
CFMRC-equally weighted	4.10E-03	0.49	2.35%
UNDECIDED PORTFOLIO (N=43)			
TSE-300 composite	4.20E-05	0.87	8.80%
CFMRC-value weighted	-1.50E-05	0.95	8.70%
CFMRC-equally weighted	1.40E-02	0.92	7.50%
BUY PORTFOLIO (N=126)			
TSE-300 composite	8.90E-04	0.97	10.60%
CFMRC-value weighted	7.00E-04	1.03	10.40%
CFMRC-equally weighted	2.70E-05	0.98	9.70%

CFMRC-value weighted: Canadian Financial Markets Research Center value weighted index of all Canadian based equities trading on TSE and available in the database.

CFMRC-equally weighted: Canadian Financial Markets Research Center equally weighted index of all Canadian based equities trading on TSE and available in the database.

TSE 300: Toronto Stock Exchange composite index.

Tables 3, 4, and 5 show the daily average abnormal returns (AAR), cumulative average abnormal returns (ACARs) and the corresponding test statistics for the buy portfolio. All tables show that regardless of the proxy used to represent the market portfolio, and even after accounting for variance shifts (column 4), there exist significant abnormal returns on the event day, on the second, seventeenth and the twentieth days preceding the event. It is possible that analysts' recommendations became available to clients on these days. The clients then initiated trades on the basis of those recommendations.

The results for the event day are significant at 1 percent in all three tables. The average daily abnormal returns is 1.24 percent on the event day for all the proxies. Also, the adjusted t-statistic is much smaller than the initial statistic. This is consistent with Brown and Warner as well as Boehmer et. al. who argued that failure to adjust for increased volatility during the event-period would result in type one error (i.e. rejection of the true hypothesis).

Figure 2 depicts the average daily cumulative abnormal returns (ACARs) throughout the event period of (-20,+20) days. The figure shows a downward sloping trend during the post-event period where there seems to be only a *partial* reversal of abnormal returns. These results suggest that when analysts' reports are first published, they convey (also) information to the market.

Furthermore, figure 3 shows a *complete* reversal of abnormal returns during the (-1,+20) day window. These findings validate the existence of a "price pressure" hypothesis during the post-event period.

Table 3

Average daily abnormal returns, t-statistics, variance adjusted t-statistics,
and cumulative abnormal returns for the buy recommendations of the "Hot Stock" column
published daily in the Financial Post from May 1, 1994, to May 31, 1996.
The results were obtained using the TSE-300 Index.

Event Day	AAR(t)	t-value	t-adj.value	ACAR	ACAR(t-value)
-20	0.75%	***3.51	**2.42	0.75%	***3.51
-19	0.17%	-0.35	-0.11	0.91%	-0.25
-18	0.53%	1.85	1.01	1.44%	1.07
-17	0.74%	***3.05	*1.83	2.19%	1.53
-16	0.00%	**2.13	0.67	2.18%	0.95
-15	0.22%	0.92	0.45	2.41%	0.38
-14	0.38%	0.37	0.24	2.79%	0.14
-13	0.03%	-0.29	-0.22	2.82%	-0.10
-12	0.04%	-0.40	-0.18	2.86%	-0.13
-11	-0.07%	***-2.58	-1.17	2.79%	-0.82
-10	0.63%	**2.46	0.95	3.42%	0.74
-9	0.11%	-1.36	-0.58	3.53%	-0.39
-8	0.72%	***2.85	1.50	4.25%	0.79
-7	0.84%	***3.23	1.58	5.08%	0.86
-6	0.12%	*1.87	0.86	5.20%	0.48
-5	0.49%	0.01	0.00	5.69%	0.00
-4	0.71%	1.11	0.57	6.40%	0.27
-3	0.56%	1.97	0.93	6.96%	0.47
-2	0.57%	***5.16	***2.85	7.53%	1.18
-1	0.11%	0.83	0.49	7.64%	0.19
0	1.24%	***9.05	***2.72	8.88%	**1.98
1	-0.06%	*1.84	0.77	8.83%	0.39
2	-0.02%	-0.29	-0.27	8.81%	-0.06
3	0.38%	1.00	0.61	9.18%	0.20
4	-0.40%	***-3.13	*-1.68	8.78%	-0.63
5	0.54%	***4.60	1.45	9.32%	0.90
6	0.07%	0.92	0.64	9.40%	0.18
7	-0.48%	**-2.32	-1.58	8.92%	-0.44
8	-0.18%	-1.45	-0.80	8.73%	-0.27
9	-0.27%	**-2.20	*-1.65	8.47%	-0.40
10	0.10%	0.00	0.00	8.57%	0.00
11	0.11%	-0.41	-0.24	8.68%	-0.07
12	-0.09%	-0.86	-0.70	8.59%	-0.15
13	-0.13%	-0.28	-0.12	8.46%	-0.05
14	-0.12%	1.54	1.13	8.34%	0.26
15	-0.15%	-1.11	-0.63	8.19%	-0.18
16	0.21%	0.68	0.55	8.40%	0.11
17	-0.23%	-1.06	-0.78	8.17%	-0.17
18	-0.19%	0.34	0.22	7.98%	0.05
19	-0.34%	-1.17	-0.74	7.64%	-0.19
20	-0.59%	***-4.31	*-1.92	7.04%	-0.67

*The null hypothesis of zero abnormal returns is rejected at 10-percent level.
**The null hypothesis of zero abnormal returns is rejected at 5-percent level.
***The null hypothesis of zero abnormal returns is rejected at 1-percent level.

Table 4

Average daily abnormal returns, t-statistics, variance adjusted t-statistics,
and cumulative abnormal returns for the buy recommendations of the "Hot Stock" column
published daily in the Financial Post from May 1, 1994, to May 31, 1996.
The results were obtained using the CFMRC-Value Weight Index.

Event Day	AAR(t)	t-value	t-adj.value	ACAR	ACAR(t-value)
-20	0.78%	***4.33	***2.95	0.78%	***4.33
-19	0.20%	***3.14	**2.02	0.97%	**2.22
-18	0.57%	***2.73	1.63	1.54%	1.57
-17	0.76%	***4.49	***3.05	2.30%	**2.25
-16	-0.01%	-0.15	-0.09	2.30%	-0.07
-15	0.24%	*1.88	0.92	2.53%	0.77
-14	0.41%	1.60	1.11	2.95%	0.61
-13	0.06%	0.58	0.39	3.00%	0.21
-12	0.06%	1.53	1.00	3.06%	0.51
-11	-0.05%	-0.84	-0.61	3.01%	-0.27
-10	0.66%	***3.79	*1.82	3.67%	1.14
-9	0.12%	0.22	0.13	3.79%	0.06
-8	0.75%	***3.97	**2.10	4.54%	1.10
-7	0.85%	***4.69	***2.61	5.39%	1.25
-6	0.14%	0.74	0.52	5.53%	0.19
-5	0.50%	**1.99	1.31	6.04%	0.50
-4	0.73%	***2.65	*1.78	6.77%	0.64
-3	0.57%	***3.31	*1.78	7.34%	0.78
-2	0.59%	***5.23	***2.91	7.93%	1.20
-1	0.13%	0.88	0.51	8.05%	0.20
0	1.24%	***7.31	***4.13	9.30%	**1.97
1	-0.05%	0.17	0.12	9.25%	0.04
2	0.01%	-0.86	-0.79	9.26%	-0.18
3	0.39%	0.72	0.52	9.65%	0.15
4	-0.40%	**-2.10	*-1.85	9.25%	-0.42
5	0.55%	***2.80	1.06	9.80%	0.55
6	0.09%	0.58	0.41	9.88%	0.11
7	-0.46%	**-2.28	-1.49	9.42%	-0.43
8	-0.18%	-0.49	-0.34	9.24%	-0.09
9	-0.26%	**-2.09	-1.56	8.98%	-0.38
10	0.12%	-0.40	-0.29	9.11%	-0.07
11	0.13%	1.24	0.99	9.24%	0.22
12	-0.07%	0.19	0.15	9.16%	0.03
13	-0.12%	*-1.94	-1.55	9.05%	-0.33
14	-0.11%	0.96	0.69	8.94%	0.16
15	-0.13%	-1.00	-0.55	8.81%	-0.17
16	0.22%	0.86	0.70	9.03%	0.14
17	-0.22%	-0.74	-0.56	8.81%	-0.12
18	-0.19%	-0.51	-0.39	8.62%	-0.08
19	-0.31%	-0.44	-0.29	8.31%	-0.07
20	-0.56%	**-2.38	*-1.73	7.75%	-0.37

*The null hypothesis of zero abnormal returns is rejected at 10-percent level.
**The null hypothesis of zero abnormal returns is rejected at 5-percent level.
***The null hypothesis of zero abnormal returns is rejected at 1-percent level.

Table 5

Average daily abnormal returns, t-statistics, variance adjusted t-statistics,
and cumulative abnormal returns for the buy recommendations of the "Hot Stock" column
published daily in the Financial Post from May 1, 1994, to May 31, 1996.
The results were obtained using the CFMRC-Equally Weighted Index.

Event Day	AAR(t)	t-value	t-adj.value	ACAR	ACAR(t-value)
-20	0.79%	***4.03	***2.80	0.75%	***4.03
-19	0.17%	**2.02	1.45	0.91%	1.43
-18	0.55%	***3.11	**1.99	1.47%	*1.79
-17	0.70%	***3.16	**2.24	2.16%	1.58
-16	0.08%	-0.19	-0.13	2.25%	-0.08
-15	0.24%	1.10	0.67	2.49%	0.45
-14	0.37%	1.42	1.09	2.86%	0.54
-13	0.08%	0.46	0.33	2.94%	0.16
-12	0.01%	0.98	0.64	2.95%	0.33
-11	0.06%	0.27	0.21	3.01%	0.09
-10	0.64%	***2.95	1.58	3.64%	0.89
-9	0.14%	0.34	0.21	3.79%	0.10
-8	0.79%	***3.90	**2.09	4.58%	1.08
-7	0.81%	***4.76	***2.95	5.39%	1.27
-6	0.17%	1.06	0.71	5.56%	0.27
-5	0.43%	1.83	1.24	5.99%	0.46
-4	0.71%	***2.65	*1.83	6.70%	0.64
-3	0.56%	***3.35	*1.74	7.26%	0.79
-2	0.55%	***5.16	***2.86	7.80%	1.18
-1	0.18%	1.63	0.79	7.98%	0.37
0	1.24%	***6.74	***4.18	9.22%	*1.66
1	-0.02%	0.59	0.43	9.20%	0.13
2	0.00%	-0.22	-0.21	9.20%	-0.05
3	0.39%	0.94	0.62	9.59%	0.19
4	-0.40%	-1.56	-1.36	9.19%	-0.31
5	0.50%	**2.21	0.84	9.70%	0.43
6	0.04%	0.17	0.12	9.74%	0.03
7	-0.46%	*-1.81	-1.22	9.28%	-0.34
8	-0.21%	-0.65	-0.47	9.07%	-0.12
9	-0.25%	*-1.90	-1.44	8.82%	-0.35
10	0.10%	-0.75	-0.57	8.92%	-0.14
11	0.12%	0.81	0.60	9.04%	0.14
12	-0.14%	-0.84	-0.78	8.90%	-0.15
13	-0.11%	-1.38	-1.10	8.79%	-0.24
14	-0.06%	1.09	0.79	8.73%	0.18
15	-0.16%	-1.01	-0.62	8.58%	-0.17
16	0.19%	0.21	0.18	8.77%	0.03
17	-0.29%	-0.39	-0.30	8.48%	-0.06
18	-0.18%	-0.43	-0.33	8.30%	-0.07
19	-0.33%	-1.19	-0.86	7.97%	-0.19
20	-0.54%	**-2.23	*-1.65	7.43%	-0.35

*The null hypothesis of zero abnormal returns is rejected at 10-percent level.
**The null hypothesis of zero abnormal returns is rejected at 5-percent level.
***The null hypothesis of zero abnormal returns is rejected at 1-percent level.

Figure 2
Average Daily Cumulative Abnormal Returns For The Buy
Recommendations
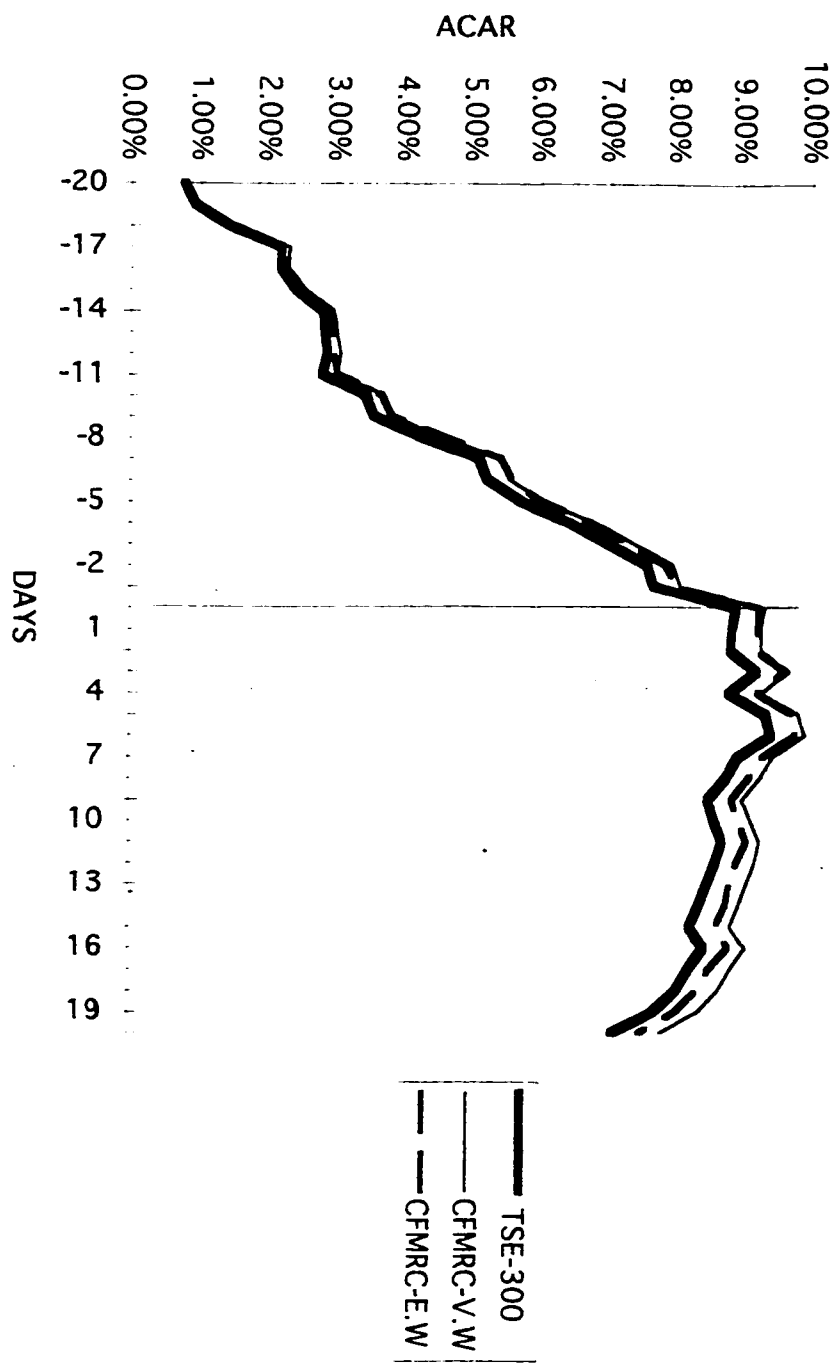
Figure 3
Average Daily Cumulative Abnormal Returns For The Buy
Recommendations

TSE-300
CFMRC-V.W
CFMRC-E.W
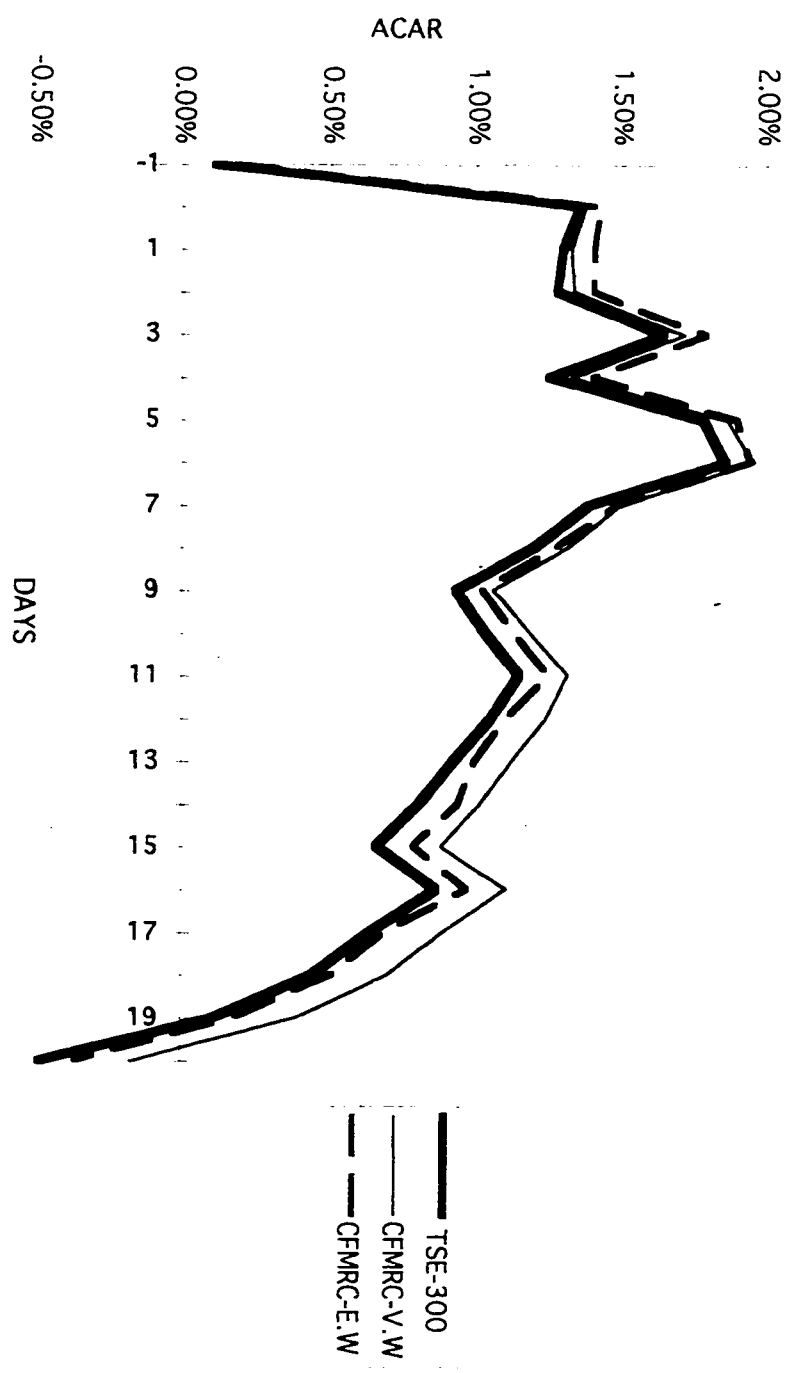
Tables 6, 7, and 8 show the results for the sell portfolio. The results are not significant on the event date. Adjustment appears to be taking place during the pre-event period. Especially, during the sixth, fourteenth, eighteenth, and twentieth days before the event the portfolio yields significant negative abnormal returns. Beyond the support of the null hypothesis the results for the sell portfolio are not very revealing and should be interpreted with caution due to small sample size.

Tables 9, 10, and 11 show the results for the undecided portfolio. Not surprisingly, the abnormal returns on the event-day are not significant. Sixth and twentieth post-event days are significant for all three market indices. During those days there are significant negative returns earned by the undecided portfolio even after adjusting the test statistic. A trend reversal whereby the average daily returns and the test statistics become mostly negative is also apparent.

It is seen again that the adjusted t-value is lower than the initial value of the test statistic. Also, consistent with the results of the buy portfolio those results that were obtained using TSE-300 as the market proxy appear to be the most conservative among the three indices after adjusting for variance shifts.

Overall, there could be no abnormal returns earned by an investor buying or selling the undecided portfolio on the event day.

Table 6

Average daily abnormal returns, t-statistics, variance adjusted t-statistics,
and cumulative abnormal returns for the sell recommendations of the "Hot Stock" column
published daily in the Financial Post from May 1, 1994, to May 31, 1996.
The results were obtained using the TSE-300 Index.

Event Day	AAR(t)	t-value	t-adj.value	ACAR	ACAR(t-value)
-20	-1.96%	*-2.30	*-1.88	-1.96%	*-2.29
-19	1.57%	1.80	1.80	-0.39%	1.27
-18	-2.61%	*-2.10	*-2.02	-2.99%	-1.21
-17	-0.86%	-1.22	-1.62	-3.85%	-0.61
-16	0.28%	0.08	0.06	-3.57%	0.04
-15	0.12%	-0.56	-0.40	-3.45%	-0.23
-14	-2.17%	**-2.43	*-2.09	-5.62%	-0.92
-13	-1.85%	*-2.19	-1.39	-7.47%	-0.77
-12	-1.42%	-1.67	-1.25	-8.90%	-0.56
-11	-1.60%	*-2.14	-1.37	-10.50%	-0.68
-10	0.49%	-0.58	-0.42	-10.01%	-0.18
-9	-1.69%	-1.64	-0.98	-11.70%	-0.47
-8	-0.36%	-0.59	-0.53	-12.06%	-0.16
-7	-0.77%	-0.66	-0.68	-12.82%	-0.18
-6	-2.49%	*-2.40	*-1.93	-15.31%	-0.62
-5	2.24%	**2.50	1.30	-13.07%	0.62
-4	3.42%	**2.90	1.21	-9.64%	0.70
-3	0.31%	1.33	0.45	-9.34%	0.31
-2	-3.12%	**-2.52	-0.85	-12.46%	-0.58
-1	-2.50%	**-2.61	-0.99	-14.96%	-0.58
0	-1.56%	-0.33	-0.24	-16.52%	-0.07
1	1.42%	0.79	0.52	-15.10%	0.17
2	-1.45%	-1.46	-1.04	-16.55%	-0.30
3	-0.99%	-1.75	-1.37	-17.54%	-0.36
4	0.29%	0.60	0.61	-17.25%	0.12
5	-0.46%	-0.41	-0.52	-17.72%	-0.08
6	0.54%	0.59	0.38	-17.17%	0.11
7	2.97%	**2.57	0.92	-14.20%	0.49
8	-1.77%	-1.47	-1.30	-15.97%	-0.27
9	0.39%	0.54	0.40	-15.58%	0.10
10	-0.06%	0.09	0.09	-15.64%	0.02
11	-0.27%	-0.03	-0.03	-15.91%	-0.01
12	-0.70%	-0.59	-0.59	-16.62%	-0.10
13	0.56%	0.37	0.22	-16.05%	0.06
14	1.12%	1.53	0.79	-14.93%	0.26
15	-2.23%	*-2.11	-1.74	-17.16%	-0.35
16	0.28%	0.14	0.13	-16.88%	0.02
17	-2.03%	**-2.48	-1.82	-18.91%	-0.40
18	-1.82%	-1.50	-1.21	-20.73%	-0.24
19	-1.38%	-1.31	-0.71	-22.10%	-0.21
20	1.65%	0.83	0.62	-20.46%	0.13

*The null hypothesis of zero abnormal returns is rejected at 10-percent level.
**The null hypothesis of zero abnormal returns is rejected at 5-percent level.

Table 7

Average daily abnormal returns, t-statistics, variance adjusted t-statistics,
and cumulative abnormal returns for the sell recommendations of the "Hot Stock" column
published daily in the Financial Post from May 1, 1994, to May 31, 1996.
The results were obtained using theCFMRC-Value Weighted Index.

Event Day	AAR(t)	t-value	t-adj.value	ACAR	ACAR(t-value)
-20	-2.00%	**-2.38	*-1.95	-1.96%	**-2.38
-19	1.58%	1.83	1.80	-0.38%	1.29
-18	-2.61%	**-2.11	*-2.04	-2.99%	-1.22
-17	-0.85%	-1.23	-1.64	-3.84%	-0.62
-16	0.27%	0.06	0.05	-3.57%	0.03
-15	0.08%	-0.61	-0.43	-3.49%	-0.25
-14	-2.19%	**-2.44	*-2.10	-5.68%	-0.92
-13	-1.86%	*-2.21	-1.41	-7.54%	-0.78
-12	-1.43%	-1.67	-1.25	-8.97%	-0.56
-11	-1.64%	*-2.20	-1.41	-10.61%	-0.69
-10	0.43%	-0.67	-0.48	-10.17%	-0.20
-9	-1.73%	-1.73	-1.03	-11.90%	-0.50
-8	-0.32%	-0.51	-0.46	-12.22%	-0.14
-7	-0.78%	-0.69	-0.70	-13.00%	-0.18
-6	-2.55%	**-2.49	*-2.00	-15.55%	-0.64
-5	2.26%	**-2.53	1.32	-13.29%	0.63
-4	3.41%	**-2.89	1.20	-9.89%	0.70
-3	0.30%	1.32	0.45	-9.58%	0.31
-2	-3.11%	**-2.52	-0.85	-12.70%	-0.58
-1	-2.52%	**-2.64	-1.00	-15.22%	-0.59
0	-1.59%	-0.38	-0.27	-16.81%	-0.08
1	1.41%	0.79	0.52	-15.41%	0.17
2	-1.45%	-1.46	-1.05	-16.86%	-0.31
3	-0.98%	-1.71	-1.34	-17.84%	-0.35
4	0.27%	0.58	0.58	-17.57%	0.12
5	-0.50%	-0.50	-0.64	-18.08%	-0.10
6	0.54%	0.59	0.38	-17.53%	0.11
7	2.95%	**2.52	0.90	-14.59%	0.48
8	-1.76%	-1.45	-1.28	-16.35%	-0.27
9	0.35%	0.50	0.37	-16.00%	0.09
10	-0.05%	0.11	0.10	-16.05%	0.02
11	-0.27%	-0.05	-0.05	-16.32%	-0.01
12	-0.76%	-0.67	-0.68	-17.08%	-0.12
13	0.55%	0.38	0.23	-16.52%	0.07
14	1.10%	1.49	0.77	-15.42%	0.25
15	-2.25%	**-2.13	-1.75	-17.67%	-0.36
16	0.27%	0.12	0.11	-17.41%	0.02
17	-2.04%	**-2.50	-1.80	-19.45%	-0.41
18	-1.79%	-1.45	-1.17	-21.24%	-0.23
19	-1.39%	-1.33	-0.73	-22.62%	-0.21
20	1.63%	0.81	0.61	-20.99%	0.13

*The null hypothesis of zero abnormal returns is rejected at 10-percent level.
**The null hypothesis of zero abnormal returns is rejected at 5-percent level.

Table 8

Average daily abnormal returns, t-statistics, variance adjusted t-statistics, and cumulative abnormal returns for the sell recommendations of the "Hot Stock" column published daily in the Financial Post from May 1, 1994, to May 31, 1996.
The results were obtained using the CFMRC-Equally Weighted Index.

Event Day	AAR(t)	t-value	t-adj.value	ACAR	ACAR(t-value)
-20	-2.13%	**-2.63	*-2.35	-2.10%	**-2.63
-19	1.48%	1.66	1.73	-0.70%	1.18
-18	-2.64%	*-2.13	*-2.00	-3.30%	-1.23
-17	-0.98%	-1.41	*-1.88	-4.30%	-0.71
-16	0.37%	0.23	0.18	-3.90%	0.10
-15	-0.02%	-0.76	-0.51	-3.90%	-0.31
-14	-2.21%	**-2.50	*-2.13	-6.10%	-0.95
-13	-1.98%	*-2.37	-1.47	-8.10%	-0.84
-12	-1.40%	-1.61	-1.20	-9.50%	-0.54
-11	-1.62%	*-2.15	-1.48	-11.20%	-0.68
-10	0.52%	-0.57	-0.42	-10.60%	-0.17
-9	-1.97%	*-2.17	-1.40	-12.60%	-0.63
-8	-0.38%	-0.66	-0.57	-13.00%	-0.18
-7	-0.82%	-0.78	-0.87	-13.80%	-0.21
-6	-2.55%	**-2.52	*-1.99	-16.40%	-0.65
-5	2.33%	**2.66	1.41	-14.00%	0.66
-4	3.42%	**2.92	1.20	-10.60%	0.71
-3	0.21%	1.21	0.41	-10.40%	0.29
-2	-3.15%	**-2.59	-0.88	-13.60%	-0.59
-1	-2.55%	**-2.68	-1.01	-16.10%	-0.60
0	-1.64%	-0.51	-0.38	-17.70%	-0.11
1	1.31%	0.66	0.43	-16.40%	0.14
2	-1.49%	-1.50	-1.09	-17.90%	-0.31
3	-0.84%	-1.50	-1.20	-18.80%	-0.31
4	0.42%	0.78	0.76	-18.40%	0.16
5	-0.64%	-0.68	-0.84	-19.00%	-0.13
6	0.51%	0.48	0.31	-18.50%	0.09
7	2.78%	*2.28	0.81	-15.70%	0.43
8	-1.77%	-1.46	-1.32	-17.50%	-0.27
9	0.39%	0.53	0.38	-17.10%	0.10
10	-0.17%	-0.01	-0.01	-17.20%	0.00
11	-0.46%	-0.29	-0.29	-17.70%	-0.05
12	-0.98%	-1.05	-1.08	-18.70%	-0.18
13	0.56%	0.44	0.26	-18.10%	0.07
14	1.10%	1.45	0.74	-17.00%	0.25
15	-2.33%	*-2.24	-1.83	-19.40%	-0.37
16	0.22%	0.09	0.08	-19.10%	0.01
17	-2.10%	**-2.56	-1.80	-21.20%	-0.42
18	-1.77%	-1.42	-1.11	-23.00%	-0.23
19	-1.23%	-1.10	-0.59	-24.20%	-0.17
20	1.55%	0.73	0.55	-22.70%	0.11

*The null hypothesis of zero abnormal returns is rejected at 10-percent level.
**The null hypothesis of zero abnormal returns is rejected at 5-percent level.

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Table 9

Average daily abnormal returns, t-statistics, variance adjusted t-statistics,
and cumulative abnormal returns for the undecided portfolio of the "Hot Stock" column
published daily in the Financial Post from May 1, 1994, to May 31, 1996.
The results were obtained using the TSE-300 Index.

Event Day	AAR(t)	t-value	t-adj.value	ACAR	ACAR(t-value)
-20	1.49%	1.57	1.16	1.49%	1.57
-19	0.58%	-0.17	-0.15	2.07%	-0.12
-18	0.21%	1.50	1.75	2.28%	0.86
-17	-0.58%	*-1.70	-1.33	1.70%	-0.85
-16	-0.07%	-0.46	-0.45	1.63%	-0.21
-15	0.20%	0.66	0.76	1.83%	0.27
-14	0.10%	-0.25	-0.25	1.93%	-0.10
-13	0.10%	1.04	0.81	2.03%	0.37
-12	-0.07%	-0.26	-0.28	1.96%	-0.09
-11	-0.48%	-0.95	-0.94	1.47%	-0.30
-10	0.02%	-0.31	-0.37	1.49%	-0.09
-9	-0.55%	*-1.88	-1.08	0.95%	-0.54
-8	0.34%	1.00	1.13	1.29%	0.28
-7	1.00%	1.02	0.96	2.29%	0.27
-6	0.88%	1.06	0.71	3.17%	0.27
-5	1.22%	0.86	0.83	4.39%	0.22
-4	1.74%	1.67	1.38	6.13%	0.40
-3	0.36%	0.26	0.20	6.49%	0.06
-2	-0.19%	0.71	0.36	6.30%	0.16
-1	0.01%	0.35	0.16	6.31%	0.08
0	0.14%	-0.35	-0.30	6.45%	-0.08
1	-0.74%	-1.22	-1.20	5.71%	-0.26
2	-0.24%	0.07	0.09	5.47%	0.01
3	0.49%	0.38	0.41	5.96%	0.08
4	-0.09%	-0.51	-0.59	5.87%	-0.10
5	0.95%	0.76	0.64	6.82%	0.15
6	-1.07%	**-2.15	**-2.01	5.76%	-0.41
7	0.41%	0.16	0.16	6.17%	0.03
8	0.42%	0.64	0.80	6.59%	0.12
9	-0.20%	-0.86	-0.67	6.39%	-0.16
10	0.59%	1.11	1.13	6.98%	0.20
11	-0.25%	-0.66	-0.52	6.73%	-0.12
12	-0.08%	-0.21	-0.17	6.65%	-0.04
13	-0.15%	-0.34	-1.03	6.50%	-0.06
14	0.70%	-1.52	-0.98	7.20%	-0.25
15	-0.27%	-0.55	-0.46	6.93%	-0.09
16	-0.30%	-1.29	-1.31	6.64%	-0.21
17	-0.17%	0.57	0.59	6.46%	0.09
18	0.30%	0.98	1.13	6.76%	0.16
19	0.39%	0.59	0.49	7.14%	0.09
20	0.90%	**2.68	**2.56	8.04%	0.42

*The null hypothesis of zero abnormal returns is rejected at 10-percent level.
**The null hypothesis of zero abnormal returns is rejected at 5-percent level.

Table 10

Average daily abnormal returns, t-statistics, variance adjusted t-statistics,
and cumulative abnormal returns for the undecided portfolio of the "Hot Stock" column
published daily in the Financial Post from May 1, 1994, to May 31, 1996.
The results were obtained using the CFMRC-Value Weighted Index.

Event Day	AAR(t)	t-value	t-adj.value	ACAR	ACAR(t-value)
-20	1.48%	*1.98	1.33	1.48%	*1.98
-19	0.56%	-0.41	-0.34	2.04%	-0.29
-18	0.15%	1.37	1.55	2.19%	0.79
-17	-0.64%	-1.63	-1.57	1.55%	-0.82
-16	-0.13%	-1.05	-0.89	1.42%	-0.47
-15	0.14%	0.53	0.60	1.56%	0.22
-14	0.04%	-0.40	-0.39	1.60%	-0.15
-13	0.07%	0.53	0.41	1.66%	0.19
-12	-0.14%	-0.99	-1.19	1.53%	-0.33
-11	-0.51%	-1.07	-1.02	1.02%	-0.34
-10	0.02%	-0.44	-0.56	1.04%	-0.13
-9	-0.54%	**-2.25	**-2.44	0.50%	-0.65
-8	0.36%	1.08	1.20	0.86%	0.30
-7	1.01%	0.88	0.89	1.87%	0.23
-6	0.89%	1.09	0.74	2.76%	0.28
-5	1.20%	1.24	1.03	3.96%	0.31
-4	1.70%	1.64	1.33	5.66%	0.40
-3	0.35%	-0.40	-0.35	6.01%	-0.09
-2	-0.20%	0.41	0.21	5.81%	0.09
-1	0.00%	0.89	0.39	5.81%	0.20
0	0.08%	-0.80	-0.66	5.89%	-0.18
1	-0.71%	-1.07	-1.51	5.17%	-0.23
2	-0.32%	-0.19	-0.23	4.86%	-0.04
3	0.41%	0.14	0.14	5.27%	0.03
4	-0.15%	-0.80	-1.01	5.11%	-0.16
5	0.89%	0.59	0.49	6.01%	0.12
6	-1.09%	**-2.31	**-2.65	4.91%	-0.44
7	0.46%	0.19	ΰ.19	5.37%	0.04
8	0.47%	0.81	1.01	5.84%	0.15
9	-0.22%	-0.65	-0.53	5.62%	-0.12
10	0.58%	0.84	0.88	6.20%	0.15
11	-0.26%	-0.92	-0.74	5.94%	-0.16
12	-0.08%	-0.51	-0.40	5.86%	-0.09
13	-0.50%	-0.68	-0.60	5.36%	-0.20
14	0.20%	-0.40	-0.99	5.56%	-0.12
15	-0.26%	-0.16	-0.16	5.30%	-0.03
16	-0.39%	**-2.03	*-1.68	4.91%	-0.33
17	-0.20%	-0.65	-0.44	4.71%	-0.11
18	0.30%	0.26	0.30	5.00%	0.04
19	0.39%	**-2.35	1.04	5.40%	0.37
20	0.83%	**-2.70	**-2.68	6.23%	0.42

*The null hypothesis of zero abnormal returns is rejected at 10-percent level.
**The null hypothesis of zero abnormal returns is rejected at 5-percent level.

Table 11

Average daily abnormal returns, t-statistics, variance adjusted t-statistics,
and cumulative abnormal returns for the undecided portfolio of the "Hot Stock" column
published daily in the Financial Post from May 1, 1994, to May 31, 1996.
The results were obtained using the CFMRC-Equally Weighted Index.

Event Day	AAR(t)	t-value	t-adj.value	ACAR	ACAR(t-value)
-20	1.49%	*-1.77	1.25	1.49%	*-1.77
-19	0.57%	-0.29	-0.24	2.06%	-0.21
-18	0.18%	1.43	1.65	2.24%	0.83
-17	-0.61%	*-1.67	**-2.43	1.63%	-0.83
-16	-0.10%	-0.76	-0.67	1.52%	-0.34
-15	0.17%	0.60	0.68	1.69%	0.24
-14	0.07%	-0.33	-0.32	1.76%	-0.12
-13	0.08%	0.78	0.61	1.85%	0.28
-12	-0.10%	-0.62	-0.73	1.74%	-0.21
-11	-0.49%	-1.01	-0.98	1.25%	-0.32
-10	0.02%	-0.38	-0.46	1.27%	-0.11
-9	-0.54%	**-2.06	**-2.26	0.73%	-0.59
-8	0.35%	1.04	1.17	1.07%	0.29
-7	1.00%	0.95	0.93	2.08%	0.25
-6	0.89%	1.08	0.72	2.97%	0.28
-5	1.21%	1.05	0.93	4.17%	0.26
-4	1.72%	1.65	1.36	5.90%	0.40
-3	0.35%	-0.07	-0.08	6.25%	-0.02
-2	-0.20%	0.56	0.29	6.05%	0.13
-1	0.01%	0.62	0.28	6.06%	0.14
0	0.11%	-0.58	-0.48	6.17%	-0.13
1	-0.72%	-1.14	-1.60	5.44%	-0.24
2	-0.28%	-0.06	-0.07	5.16%	-0.01
3	0.45%	0.26	0.27	5.61%	0.05
4	-0.12%	-0.65	-0.80	5.49%	-0.13
5	0.92%	0.67	0.57	6.41%	0.13
6	-1.08%	**-2.23	**-2.57	5.34%	-0.43
7	0.43%	0.17	0.17	5.77%	0.03
8	0.45%	0.72	0.91	6.21%	0.13
9	-0.21%	-0.76	-0.60	6.00%	-0.14
10	0.59%	0.98	1.00	6.59%	0.18
11	-0.26%	-0.79	-0.63	6.33%	-0.14
12	-0.08%	-0.36	-0.29	6.26%	-0.06
13	-0.20%	-0.35	-1.03	6.06%	-5.46
14	-0.40%	-0.85	-0.98	5.66%	-5.16
15	-0.26%	-0.35	-0.31	5.39%	-0.06
16	-0.34%	-1.60	-1.50	5.05%	-0.27
17	-0.19%	-0.04	0.08	4.86%	-0.01
18	0.30%	0.62	0.72	5.16%	0.10
19	0.39%	1.47	0.77	5.55%	0.23
20	0.86%	**2.69	**2.62	6.41%	0.42

*The null hypothesis of zero abnormal returns is rejected at 10-percent level.
**The null hypothesis of zero abnormal returns is rejected at 5-percent level.

Economic Significance Of Results

A randomly chosen fee schedule of a discount brokerage service is shown in Table 12. It is assumed that an investor trades through a personal computer rather than via a telephone. An investor who does not want to trade over one thousand shares has to pay a flat fee of twenty-nine dollars per transaction, or fifty-eight dollars for a "round trip". Since the average abnormal return on the event day is 1.24%, an investor would earn abnormal profits if transaction costs are below 1.24% of the total sum spent to acquire the shares. This would happen when an investor spends over $4,677.42 but buys less than 1,000 shares.[10] It is seen that the cost of a trade can indeed be below the abnormal return earned on the event day.

Table 12

Orders Placed Using PC Action of the Royal Bank of Canada

Up to 1,000 shares: $29 (CDN or U.S.)	
For Greater Than 1,000 shares:	
Stock Price	**Commission Rate**
$0-$0.245	1.5% of trade
$0.25-$1.00	$0.005 per share
$1.01-$2.00	$0.02 per share
$2.01 and over	$0.03 per share
Minimum commission: $29 (CDN or U.S.) per transaction.	

Let's look at another example. Table 12 shows that if an investor buys a stock whose price is over $2.01, he has to pay three cents per share per transaction. Equivalently, the cost of a round trip is six cents per share. In order for

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10 $\dfrac{58}{0.0124} = \$4,677.42$

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transaction costs to be below the average abnormal return on the event day, the price per share has to exceed $4.84.[11] Therefore, *ceteris paribus* the higher the initial price per share, and the more an investor buys of the stock, the higher the dollar abnormal returns for the investor.

The above findings do not appear to be consistent with market efficiency. However, to truly examine economic significance, I need to use prices at which stocks start trading in the morning. As mentioned, prices could change between the closing of the exchange and the subsequent morning trading.

Economically significant profits may or may not be earned by buying the recommended stock at the start of trading on the event-day, and by selling it at the end of the same day. Many investors are subscribed to the Financial Post, and some could try the same strategy. Opening prices set by Specialists may be such that no abnormal returns would be possible.

The undecided and the sell portfolios on the other hand, do not reject the null hypothesis. The latter conflicts with previous research which indicates negative abnormal returns on the event day. This inconsistency is possibly due to the small sample size of the sell portfolio. As for the long-term results, they are inconclusive. Finally, after utilizing three different proxies for the market, I do not detect significant differences in results. Overall, the results do not conflict with previously documented research. Furthermore, initial concerns regarding the possibility of type 1 error appear to be unwarranted and the "price pressure" hypothesis seems to be supported.

[11] $\dfrac{0.06}{0.0124} = \$4.84$

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Long-Term Tests and Results

As we saw, short-term tests rejected the null hypothesis for the buy sample, and also appeared to support the notion of the "price pressure" as exhibited by post-event negative returns. It would be interesting for an investor to test whether or not abnormal returns persist in the long-term.

A debate has been growing in the academic literature regarding the most appropriate model for long-term studies. Although, the discussion centers around studies of *multi-year* post-event period, I would still like to address this issue.

Brown and Warner (1980) were among the first to suggest that CARs approach to measuring post-event return extending beyond a few months may be inappropriate. Barber and Lyon (1997) supported the buy-and-hold method as being conceptually more correct due to its inclusion of the compounding effect. They particularly favored the control firm approach whereby the performance of the sample is measured against the performance of firms matched by size and book-to-market ratio.

Kothari and Warner (1997) supported the buy-and-hold approach only in the context of a bootstrap methodology used by Ikenberry et al. This sophisticated technique involved the construction of a bootstrap distribution. This was accomplished by randomly selecting from the population on an event day of a sample firm, a firm matching in size and book-to-market ratio to the sample firm. This selection procedure was done for every firm in the sample. The firms were also matched by industry. The procedure was then repeated several

thousand times and thus, requires extensive data and advanced computer programming.

Fama (1997) on the other hand, was in favour of the CARs approach. He asserted that the buy-and-hold methodology and the control firm approach are very sensitive to such factors as length of period and sample characteristics. He further argued that more complex methodologies which aimed at improving study results, could seldom be utilized without significant side effects. Thus, their contribution to the research is often marginal. He also advocated the use of shorter post-event intervals not extending beyond a few months.

Clearly, there was no consensus among the researchers as to which was the best way to measure abnormal returns in long horizon event studies. This dilemma is mitigated in my study by the fact that I only look at six months of post-event period. As mentioned, the average level of systematic risk in my buy portfolio is approximately equal to the level of market risk. We can thus use the three indexes as our benchmark portfolios. The hypothesis to be tested is as follows:

H2: Abnormal returns cannot be earned six months after the event day.

As before, I use three different benchmarks: TSE-300 composite index, and CFMRC equally and value weighted indices. The buy-and-hold six-months returns for the sample as well as the benchmarks are calculated as follows:

$$R_{i,120} = \left[\prod_{t=1}^{120} (1 + R_{it}) - 1 \right] \times 100\% \qquad (17)$$

where R_{i120} and R_{mi120} are six-month (or 120 working days) returns for the sample stock i and a benchmark portfolio during the same period.

$$R_{m, J20} = \left[\prod_{t=1}^{120} \left(1 + R_{m, t} \right) - 1 \right] \times 100\% \tag{18}$$

The wealth relative is calculated by dividing one plus the average of the end of period wealth from holding a portfolio of sample firms by one plus the average of the end of period wealth of the benchmark.

$$WR = \frac{1 + \left[\frac{1}{126} \sum_{i=1}^{126} \left(R_{i, J20} \right) \right]}{1 + \left[\frac{1}{126} \sum_{i=1}^{126} \left(R_{m, J20} \right) \right]} \tag{19}$$

A wealth relative greater than one means that the sample outperforms the benchmark. A more formal testing is done by calculating the buy-and-hold abnormal returns for each stock as follows:

$$BHAR_{i120} = \prod_{t=1}^{120} \left(1 + R_{it} \right) - \prod_{t=1}^{120} \left(1 + R_{m, t} \right) \tag{20}$$

Then, the average abnormal return for the whole sample is calculated.

$$\overline{BHAR}_{120} = \frac{1}{126} \sum_{i=1}^{126} BHAR_{i120} \tag{21}$$

Next, we find the cross-sectional sample standard deviation of abnormal returns.

$$\sigma_{\overline{(BHAR_{120})}} = \frac{1}{126-1}\left[\sum_{i=1}^{126}\left(BHAR_{i120} - \overline{BHAR_{120}}\right)^2\right]^{0.5} \quad (22)$$

The corresponding test statistic is: $t_{statistic} = \dfrac{\overline{BHAR_{120}}}{\dfrac{\sigma_{\overline{(BHAR_{120})}}}{\sqrt{126}}}$ (23)

Table 13
Long-Term Test Statistics

	TSE-300	CFMRC-V.W	CFMRC-E.W
WR	1.18	1.16	1.04
t-statistic	*1.89	*1.66	0.52

*The null hypothesis of zero average BHAR
is rejected at 10-percent level.

As can be seen in table 13, the wealth relative is greater than one indicating that the portfolio outperforms all three benchmarks. Tests of statistical significance however are less conclusive. In two cases out of three, the null hypothesis is rejected at a ten percent level of significance. In one of those two cases, the case of the value weighted index, the test statistic is only marginally significant. Thus, when we combine previous results which indicate partial reversal of abnormal returns after the event day with these long-term tests, we cannot firmly state that the long-term buy-and-hold performance of the buy portfolio outperforms the market.

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Conclusions

Implementing the standard as well as the modified event-study methodology I test the possibility of earning abnormal returns by acting on the buy/sell recommendations published in the Financial Post's HT column between May 1, 1994 and May 31, 1996 utilizing three market proxies. The results for the buy sample are consistent with previous research indicating the existence of statistically significant short-term abnormal returns. Economic significance of the results could not be firmly established.

Results also show that the methodological improvement significantly reduces the magnitude of test statistics. Nevertheless, they still remain large enough to reject the null hypothesis of zero abnormal returns. Furthermore, a complete reversal in returns occurs during the post-event period implying investors' overreaction. It appears that analysts have the power to influence the market and exacerbate the volatility of stock returns. Overall, the price pressure as well as the information hypotheses are supported in this paper.

Further Research Suggestions

As discussed, examination of economic significance for the buy sample was inconclusive. An exhaustive test could be conducted and would require the use of opening stock prices.

It could be also interesting to update this study in the future for the purpose of testing whether the market "learned" from past events and became more efficient over time by eliminating or reducing the opportunities to earn abnormal profits.

Another possible research venue is to conduct a similar investigation using a "Buy & Sell" column of Sonita Horvitch that also regularly appears in the "Investing" section of the Financial Post. This column is similar to the (HT) column. Can abnormal returns similar to those of HT be earned by acting on recommendations published in the "Buy & Sell" column?
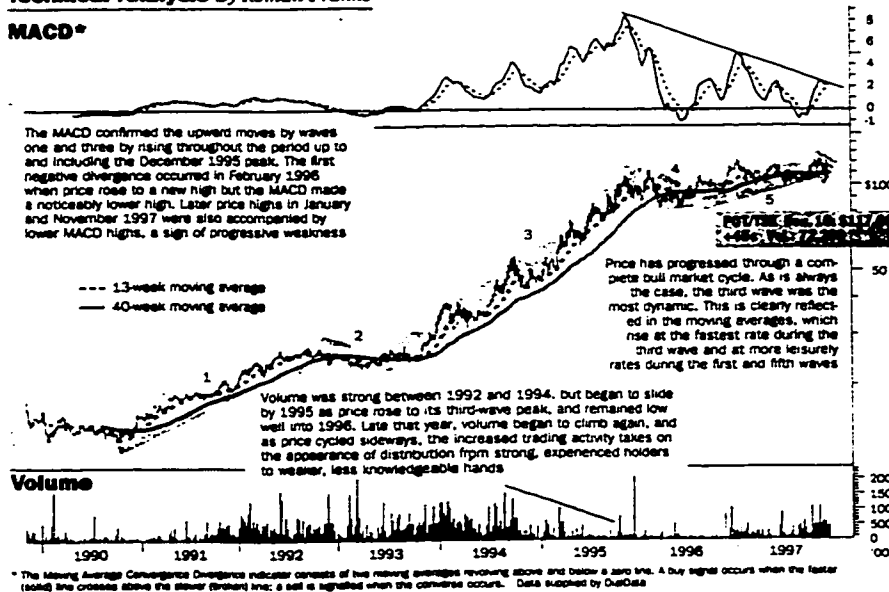
Finally, it may also be desirable to investigate the possible presence of a small firm effect. As mentioned, this investigation was conducted by Huth and Maris. In their study of analysts' recommendations published in HOTS the small firm effect was apparent only in negative recommendations of the analysts.

Hot Stock

Technical Analysis *By Roman Franko*

MACD*

The MACD confirmed the upward moves by waves one and three by rising throughout the period up to and including the December 1995 peak. The first negative divergence occurred in February 1996 when price rose to a new high but the MACD made a noticeably lower high. Later price highs in January and November 1997 were also accompanied by lower MACD highs, a sign of progressive weakness

--- 13-week moving average
— 40-week moving average

Price has progressed through a complete bull market cycle. As is always the case, the third wave was the most dynamic. This is clearly reflected in the moving averages, which rise at the fastest rate during the third wave and at more leisurely rates during the first and fifth waves

Volume was strong between 1992 and 1994, but began to slide by 1995 as price rose to its third-wave peak, and remained low well into 1996. Late that year, volume began to climb again, and as price cycled sideways, the increased trading activity takes on the appearance of distribution from strong, experienced holders to weaker, less knowledgeable hands

Volume

Potash Corp. of Saskatchewan is in the process of completing a bull market that began in late 1991 and has progressed through five waves of buying and selling.

The first wave doubled price from $13 to $26. The third wave was by far the most dynamic, quadrupling price to more than $110. The fifth wave took price from the $83 to $123. Profit taking on waves two and four was orderly and contained.

The technical indicators are signalling that a correction of the bull market can be expected soon. Price has been going sideways since early 1996 even as the MACD has been making negative divergences from price. The volume pattern points to distribution. However, the continuing strength of price in the face of these negative factors suggests that the correction will, like waves two and four, be orderly and limited to the $85 range.

Roman Franko is a technical analyst with a Toronto institutional brokerage. He may hold shares in companies mentioned here.

China provides fertile ground for Potash Corp.

Potash Corp. of Sask.

CEO: Charles Childers
Ticker: POT
Listed: TSE, NYSE, ME
Head office: Saskatoon
Tel: (306) 933-8500

BY PETER KENNEDY
Vancouver Bureau *The Financial Post*

As profit forecasts go, so goes the share price of fertilizer giant Potash Corp. of Saskatchewan Inc.

That explains why the company's stock (POT/TSE, NYSE) jumped last week on news that Canpotex, the agency that exports potash on behalf of Saskatchewan producers, signed a deal to export 700,000 tonnes of the commodity to China by the end of February.

Saskatchewan-based Potash Corp. is the world's largest fertilizer company, with capacity to produce the three main plant nutrients: potash, nitrogen and phosphate.

As it contributes 58% of Canpotex's offshore sales, Potash Corp. is also the chief beneficiary of any deals involving the agency. After the China deal was announced Dec. 2, Potash Corp. shares climbed ⅜ to US$83⅞ in New York and jumped $3.75 to $118.25 in Toronto.

Despite Southeast Asia's currency woes, the stock has continued to gyrate, closing yesterday up ½ at US$82⅞ in New York and up 45¢ at $117.60 in Toronto.

Analysts attribute the market reaction to estimates that the Chinese order, combined with hopes of a U.S. tax cut stemming from the recent reorganization of Potash Corp.'s U.S. operating units, will mean higher than expected profits for the company.

Analyst Douglas Groh, of Merrill Lynch & Co. in New York, has raised his one-year target price for the stock to US$90, based on estimates that higher offshore sales and a lower tax rate would add about US$10 million to Potash Corp.'s fourth-quarter earnings. He also lifted his 1997 profit estimate to US$5.65 a share from US$5.43.

Groh expects the company to earn US$6.40 a share in 1998, up from his previous estimate of US$6.06.

Potash Corp. posted earnings of US$209 million (US$4.59) on sales of US$1.4 billion in 1996. That compares to 1995 profit of US$159.5 million (US$3.68) when sales were US$856 million.

Analyst Erica Belling, of Newcrest Capital Inc. in Toronto, agrees that Potash Corp.'s stock price is driven primarily by forecasts of profit growth. However, she is less optimistic about how quickly profit will rise over the next year.

Recent acquisitions, including a US$1 billion deal to buy U.S. nitrogen giant Arcadian Corp. in March, have had a huge impact on Potash Corp., making it a leading nitrogen producer as well, producing 13% of the western world's supply. The deal also pushed Potash Corp.'s profit for the third quarter ended Sept. 30 up 53% from year-earlier levels to US$71.4 million (US$1.33) on sales of US$573.8 million. In the third quarter of 1996, the company posted a profit of US$46.8 million (US$1.03) on sales of US$342.1 million.

However, after seeing the Arcadian deal boost 1997 sales by an expected 50%, Potash Corp. cannot hope to match that kind of performance without swallowing another producer, Belling says.

"Therefore, as fertilizer is a steady but low earnings growth business, Potash Corp. must continue to make acquisitions to achieve the earnings growth required to justify higher valuations in its stock price," she says.

In June, the German government nixed Potash Corp.'s US$143-million bid for a 51% stake in Kali und Salz AG on grounds that it would stifle competition in Europe. Had the deal gone ahead, it would have doubled Potash Corp.'s sales and increased its share of the world potash market to 23% from 15%.

Without the benefit of an acquisition, Belling believes Potash Corp.'s annual earnings will rise by just US20¢ a share in 1998 to US$5.90, up from a 1997 forecast of US$5.70.

Tight supply in North America has caused potash prices to rise by about 7% in the past year and these hikes are now beginning to be reflected in international markets. That is good news for Potash Corp., which is on track for near-record potash sales this year after supplying 5.1 million

tonnes of the commodity in the first nine months of 1997, up from 4.4 million tonnes last year.

Analysts are pleased that despite economic uncertainty in Asia, China has agreed to purchase potash at higher prices than in other recent deals. Potash Corp.'s Betty-Ann Heggie says the Chinese deal is no surprise because domestic prices have risen. In Saskatchewan, for example, potash prices have jumped to around US$91 a tonne from US$69 a tonne at the end of 1996.

However, Potash Corp. is no longer a pure play on potash. Its diversification strategy means that nitrogen and phosphate fertilizers are now just as important to company profitability, representing about 32% and 33%, respectively, of total profit margins. That compares to 35% for potash. As well, nitrogen, phosphates and potash are forecast to contribute 40%, 40% and 20%, respectively, of sales revenue in 1997.

China has not been buying nitrogen, which has hurt prices for related products like ammonia, which have slipped in the US to about US$140 a tonne, from US$220 a tonne in January.

On the phosphate side, prices for related products like phosphoric acid remain relatively flat at US$340 a tonne in the US, up from US$325 a tonne at the end of 1996. However, analysts say the outlook for phosphate is positive, with strong demand expected from India and China.

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