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DOES THE MARKET IDENTIFY POTENTIAL CANDIDATES FOR ADDITION TO THE S&P 500 INDEX?

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Abstract

Does the Market Identify Potential Candidates

for Addition To the S&P 500 Index?

Shay Proper

Previous research has found positive (negative) abnormal returns on and around the announcement day of an addition (deletion) of a company to (from) the S&P 500 Index. A host of hypotheses have been proposed as possible explanations for the apparent anomalous price behaviour. Consistent with other research, this study reports a positive and significant abnormal return pattern on the day following the announcement of an addition as well as a positive reaction in the window extending from the announcement day to the effective change day.

This paper investigates the markets' capacity to identify the companies that are candidates for addition to the Standard and Poor's 500 Index. A sample of firms likely to be added to the S&P 500 are identified on a date on which the market can anticipate that an S&P 500 member will be removed from the Index and be replaced by another firm. It is referred to as the anticipation date. Specifically, the anticipation date is the date on

which the market is certain that the company in question will be removed from the Index. The sample of actual additions is assumed to be the set of potential additions to the Index, and their stock price behaviour is studied on the anticipation date. The objective is to determine if the market incorporates the likelihood of these firms being added to the S&P 500 Index, given that a change in the Index composition is certain in the near future. No evidence of a price reaction is found on the anticipation date, indicating that the market does not identify the potential additions to the Index.

Since a number of additions to the S&P 500 Index come from indexes tracked by the S&P, particular emphasis is placed on examining the abnormal price reaction of a sample of additions that originated from the S&P 400 MidCap Index. The results show that firms added from the S&P 400 Index do not react any differently, on the anticipation nor the announcement dates, compared to companies that do not originate from the S&P 400 Index. However, the study documents significant negative cumulative average abnormal return over the window extending from the anticipation day to the announcement day for firms originating from the S&P 400 Index. A similar pattern is observed when the pre announcement window is extended to one year before the announcement of addition to the S&P 500 Index. In addition to the poor performance in the year prior to addition, there is weak evidence to show that the added companies from the S&P 400 Index also under-perform one year after they are added to the S&P 500 compared to firms that were added to the S$P 500 Index but did not belong to the S&P 400 Index prior to their inclusion.

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1. Introduction

The first index fund came to be in the sixties as a consequence of William Sharpe's (1964) and Lintner's (1965) assertion that the most efficient portfolio is the market itself, given of course, the now well-known risk return optimisation objective.

An indexer is essentially a passive strategist that is a proponent of the semi-strong form of market efficiency. According to the semi-strong form efficiency hypothesis all publicly available information is assimilated instantaneously by market participants and is reflected in the security prices immediately. Consequently, the manager does not seek the "best" assets, nor tries to avoid the "worst" assets, but tries to maintain a combination of assets that exhibit the least amount of non-systematic risk. The passive indexer does not try to beat the market but rather is satisfied in attaining the same return (Buckley and Korn, 1998).

The Capital Asset Pricing Model (CAPM) postulates that investors should hold a combination of all assets in the market at their respective weights in the market. These weights are determined by calculating the ratio of the securities' market value relative to the market value of all securities. Since holding all the assets in the market is not a possibility, indexing limits the range of possible securities to be held to a representative (attempts to be) number of securities. Indexers use a "buy-and-hold" strategy where the market determines the weight of a stock in the portfolio through the change in the stocks' market value. In addition, cash dividends are reinvested in the stocks that are in the fund

so as to maintain their relative weights compared to their market value (Beneish, Whaley, 1996).

Over the past several decades indexing has become a convenient and popular investment tool. There have been many studies [e.g. Kahn and Rudd, (1995)], which indicate that active portfolio managers generally do not outperform market indices such as the S&P 500 Index in the United States or the TSE 300 Index in Canada. The difference in performance is largely due to the average 2 percent yearly management fee of active portfolio managers as well as the market timing errors of many of the active portfolio managers. In response to this evidence, many investors realised that they could do just as well as the index (with a small tracking error) without paying the high management fees of the regular active funds. This realisation is substantiated and motivated by researchers such as Kahn and Rudd (1995). The authors find support for index funds and go even further to say:

> "For equity funds, the implications are simple. With no persistence of selection returns, unless you have another basis for choosing future winners (i.e., your selection criteria include information other than historical performance), the solution is to index, perhaps to a set of style indexes weighted to match your investment objectives. Index funds should achieve at least average performance with low selection risk, low fees, low turnover, and low transaction costs. Because of their low costs, index funds typically perform above the median of all funds with similar styles."

Kahn and Rudd (1995) find that active portfolio managers do not outperform simple "buy and hold" strategies such as that used by index funds.

In their quest to find the most efficient index fund to invest in, investors must consider the merits of the index, which the fund seeks to mimic. Out of the Standard and

Poor's family of Indexes, the S&P 500 Index has emerged as the most ascribed to and followed by index fund managers. The market index is supposed to contain all the assets in the market therefore a change in the market composition would not create a difference in its risk return characteristics. Changes in the composition of a fund that contains only a limited number of assets may, on the other hand, change the characteristics of the index. Specifically, the way the index manages changes to the content of the index, that is, which firms are included and which are excluded, is a judgement call that may have information content. Investors may be able to identify, based on the change to the Index policy of the S&P, the firms that are added to the Index.

This paper examines the information content of additions to the S&P 500 Index. A sample of firms likely to be added to the S&P 500 Index are identified on a date on which the market can anticipate that an S&P 500 member will be removed from the Index and be replaced by another firm. It is referred to as the anticipation date. Specifically, the anticipation date is the date on which the market is certain that the company in question will be removed from the Index. Based on the addition and deletion guidelines published by the S&P, it is possible to identify the date on which firms, due to an impending change will no longer meet the inclusion criteria of the Index[1].

No abnormal price reaction of the added company's stock is found on the anticipation date (cumulative average abnormal return or CAAR of 0.13, Z=0.00). The

[1] For example, since most changes to the Index are due to a merger or a takeover, the date on which such a transaction is finalised and announced to the market eliminates an uncertainty regarding the exclusion of these firm(s) from the Index subsequently. The market can therefore begin to form expectations about the firms likely to replace the firm that will exit.

results show however, a significant (at a 5% level) CAAR of –5.9% in prices for the companies in the sub-sample of firms eventually added that come from the S&P 400 MidCap Index. Companies from the S&P 400 Index are likely candidates for addition since most meet the S&P's selection criteria and the better performers tend to grow in market capitalisation. Once these mid-capitalisation companies grow in terms of market value to become among the largest in that particular industry, they become likely S&P 500 addition candidates (Ip, 1998).

In addition to the above results, this study also shows that there is a larger increase in stock price on the announcement date for additions that have an identifiable anticipation date and that do not come from the S&P 400 vs. those that do come from the S&P 400. This larger price reaction of outsiders' addition to the S&P 500 is attributed to a gain in liquidity and information availability brought about by the addition to one of the largest and most widely followed indexes. Tests for the performance during the pre and post 260 trading days around the announcement of the change for the additions from the S&P 400 were performed. These tests provide weak evidence that there is a persistent under performance of the stocks that come into the S&P 500 Index from the S&P 400 Index relative to stock that are added from outside of the S&P 400 Index.

The Standard and Poor's 500 Index

The S&P 500 is a market value-weighted Index made up of 500 stocks from the New York Stock Exchange, the American Stock Exchange and the NASDAQ National

Market System. It was estimated in 1995 that the value of the funds that were indexed to the S&P 500 was 10 percent of the Index's' portfolio value of $4.59 trillion. With 10 percent of outstanding shares in this large index it is not surprising that we observe abnormal returns associated with additions and deletions of stocks from the Index [Beneish and Whaley (1997)]. In September of 1998, the Vanguard Index trust-500 alone accounted for $59.75 billion in assets. This is a tremendous growth from its $14 million asset value in 1976 [(Beneish and Whaley (1996)]. Nevertheless, these well known funds represent only a portion of the publicly traded funds that are indexed to the S&P 500[2]. Beneish and Whaley (1996) go on to suggest that the amount of publicly traded funds pegged to the S&P 500 is overshadowed by the amount of privately held funds.

With the increased attention given to indexing and index funds, researchers and practitioners attempted to explain their inner-workings. One particular topic of interest for researchers and practitioners is the behavior of the stocks' returns in response to the practice of the index managers to list and delist companies from the index. These changes in the Index occur for several reasons as described by the S&P's changes to the Index guideline[3].

[2] One can also invest in the S&P 500 portfolio by trading Standard & Poor's Depository Receipts (SPDRs) traded on the American Stock Exchange. These receipts are an interest in the portfolio of securities held by a unit investment trust and trade like a common share (Beneish and Whaley, 1996).

[3] This guideline is available in its full version on the S&P's Advisor Insight web site at: http://www.advisorinsight.com/pub/indexes/idx_contents.html.

General Guidelines for Adding Stocks to the S&P 500

1. Market Value: The S&P 500 is a market-value-weighted index. Stocks are added when they are of relatively large market value.
2. Industry Group Classification: Companies selected for the S&P 500 represent a broad range of industry segments within the U.S. economy.
3. Capitalization: Ownership of a company's outstanding common shares is carefully analyzed in order to screen out closely held companies.
4. Trading Activity: The trading volume of a company's stock is analyzed on a daily, monthly, and annual basis to ensure ample liquidity and efficient share pricing.
5. Fundamental Analysis: Both the financial and operating condition of a company are rigorously analyzed. The goal is to add companies to the Index that are relatively stable and will keep turnover in the Index low.
6. Emerging Industries: Companies in emerging industries and/or new industry groups-industry groups currently not represented in the Index are candidates for the Index as long as they meet the guidelines listed above.

General Guidelines for Removing Stocks from the S&P 500

1. Merger, Acquisition, LBO: A company is removed from the Index as close as possible to the actual transaction date.
2. Bankruptcy: A company is removed from the Index immediately after Chapter 11 filing or as soon as an alternative recapitalization plan that changes the company's debt/equity mix is approved by shareholders.

3. Restructuring: Each company's restructuring plan is analyzed in-depth. The restructured company as well as any spin-offs are reviewed for Index inclusion or exclusion.
4. Lack of Representation: A company can be removed from the Index because it no longer meets current criteria for inclusion and/or is no longer representative of its industry group.

Reason number 4 for exclusion is the effort of the S&P to maintain the Index composition representative of the stock market as a whole. These exclusions are characterized as having no other company specific information around and on the date of the change.

Previous research on changes to the S&P 500 Index has found significant and sometimes permanent price and trading volume increase (decrease) as a result of announcement of addition (deletion) of the company's stock to (from) the S&P 500 Index.

The goal of this study is to determine if the market can anticipate the additions to the S&P 500 Index. This goal is accomplished by studying the abnormal price behaviour of additions to the S&P 500 on the anticipation date. As mentioned earlier, S&P 400 MidCap Index member firms are likely candidates for addition to the S&P 500 Index (Ip, 1998). Since a number of additions in the past have come from the S&P 400, these additions are expected to experience a smaller abnormal price increase than additions from outside the S&P 400. These different price reactions are likely to be the result of a

larger gain in liquidity and availability of information for additions not from the S&P 400 than for additions from the S&P 400 Index.

The rest of the paper is organized as follows. The next section discusses the related work on changes to the S&P 500 before and after October 1989. Beginning in October 1989, the S&P began giving a minimum five-day notice before changing the stock in the Index. Prior to this date, changes were made on the day of the announcement itself. For this study, only changes from the post October 1989 period are investigated. Section three describes the hypotheses and section four describes the sample and data sources used. Section five details the methodology and section six provides the results of the analyses. Finally, concluding remarks and the summary of the findings are presented in section seven.

2. Related Work

Until October 1989, Standard & Poor's had the practice of announcing the imminent change to the Index after the close of the trading on a given day and replacing the stock(s) on the open of the next trading day (effective day). Since the markets were closed, indexers did not have the opportunity to buy the newly added stock and get rid of the deleted stock until the morning following the announcement. This practice created what some call price pressure on the first trading day after the announcement day. Faced with requests from market participants, Standard & Poor's corporation decided to change its announcement procedure. The change gives a five-day (trading) lead-time between the announcement day and the effective day. Nevertheless, there are some instances where the S&P makes exemptions to the rule, such as in the case for bankruptcies, where the firm files for Chapter 11. When a Chapter 11 filing is a surprise, the company's stock no longer trades on the market the day after the official announcement of the bankruptcy. In such cases, the S&P replaces the deleted firms without any lead time. Another exception is made when a large market capitalisation company is added. An example of such an exception is the addition of Microsoft Corp in June 1994, where the time interval between an announcement and the actual change was 16 days. Other longer intervals include the addition of Allstate Corp. (22 days), Guidant Corp. (28 days), and State Street Corp. (98 days).

Extant research into the changes to the S&P 500 can be separated into two major time periods; pre and post October 1989. This is a turning point since it is on this date that the S&P changed its method of announcing and replacing stocks in the Index. In

each period, researchers have attempted to explain the reasons for the existence of abnormal stock price performance of stocks entering and for those being removed from the Index.

2.1. Empirical Evidence from the Pre-1989 Period

The investigation of price reaction of stocks on their addition or removal from the S&P 500 began in 1986. One of the first studies on the subject was by Woolridge and Ghosh (1986). Woolridge and Ghosh note: "... any security price movements caused by institutions adjusting their holdings to reflect changes to the Index should be negated by investors who recognise the valueless consequences of being added or deleted from the index.". Some caveats to this statement are the theories that suggest complementary and in some cases competing, reasons for the abnormal returns and abnormal volumes to exist around changes to the S&P 500.

1 The information content hypothesis (ICH) states that the change to the index has no informative value to investors for the stock being added/removed from the Index.

2 The price pressure hypothesis (PPH) states that the demand curve for securities are perfectly elastic. Since shares can be bought and sold in large blocks at the prevailing market price, any loss of elasticity of the demand curves for stocks added/removed from the Index can cause only temporary changes in stock prices and liquidities (volume).

3 Liquidity cost hypothesis (LCH) states that changes in stock liquidity due to addition or removal from the index have no effect on stock prices. If the price does change, and the LCH is rejected, we expect to see a permanent change in the security's price and liquidity (Woolridge and Ghosh, 1986).

These hypotheses are discussed in more detail in the following section.

2.1.1. The Information Content Hypothesis (ICH)

The S&P Index committee clearly states, "Each stock added to the Index must represent a viable enterprise and must be representative of the industry group to which it is assigned. Its market price movements must be responsive to changes in industry affairs. Aggregate market value of the stock and its trading activity are important considerations in the stock selection process. Judgement as to the investment appeal of the stocks do not enter into the selection process." (Standard & Poor's Security Price Index Record, 1995, p.1.). Standard & Poor's does not intend to convey any "investment appeal valuations" about stocks being added or removed from the Index. Nevertheless, the attention given to the stocks in the S&P 500 by analysts and other interested parties may increase the level or quality of information available in the market. Woolridge and Ghosh (1986) find this argument unappealing and therefore discard the ICH from their study on the basis of the S&Ps' criteria for changes in the composition of the S&P 500 Index. Harris and Gurel (1986) also believe that announcements of changes to the Index do not carry any informative value but simply cause shifts in the demand curve for these stocks.

The ICH states that changes to the Index have no informative value. Perhaps the most concrete test of this hypothesis is the presence of reversal of the observed post announcement price rise. After performing this type of test, Harris and Gurel (1986) find that prices tend to return to their pre-announcement levels after about three weeks, therefore concluding that there is no information content in the changes to the Index.

In contrast with studies discussed in the preceding paragraph, Shleifer (1986) believes that there are many reasons for which the ICH could hold true. He states that the argument that inclusion into the S&P 500 certifies quality does have some appeal, after all, since the S&P elects to include only certain types of firms into the Index. These firms must be sound prospects that will remain in the Index for the long run. Avoiding excessive turnover in the Index will reduce the costs of the funds that are indexed to the S&P 500. These funds pay for the information services related to the Index and sold by the Standard & Poor's corporation, and are therefore an important source of revenue for the S&P. For these reasons, the financial soundness and investment merit of the added companies, despite denial by the S&P, may be a selection criterion in the choice of companies. Nevertheless, the author states that any information effects, if present, would be small. To test the ICH, Shleifer (1986) tests if the S&P's bond rating service can act as an indicator of the underlying objectives of the addition to the Index. Specifically, "...if Standard and Poor's rated the bonds of a particular firm as unsafe, inclusion should result in a greater upward revaluation of the shares than inclusion with good bond rating." (Shleifer, 1986). The reason for this is that the S&P would not include bad prospects into

its most well known Index with the goal of ensuring Index membership stability. The author further expects, but finds no empirical support of a negative correlation between the abnormal return on the announcement date and the quality of the bonds. This indicates that the S&P does not have particular insight into the "investment appeal" of the stock.

Dhillon and Johnson (1991) find evidence in support of the ICH. They find that previously noted price reversals by Harris and Gurel (1986) were due to a problem with the risk adjustment procedure. Correcting for this problem, Dhillon and Johnson (1991) find no price reversal in the same period of time (1984-1988) even after investigating as far as sixty days after the change to the Index. In addition, Dhillon and Johnson (1991) examine the price behaviour of bonds, puts, and calls of the listed companies. These also exhibit the same pattern of abnormal volume and abnormal returns corresponding to additions and deletions from the S&P 500. The authors note a 26 % rise in the call and put returns of stocks being added to the Index. They state that the increase is "...so large that it is hard to believe that it is caused by price pressure. One would have to assert that trades require a huge and fairly predictable price decrease to induce them to sell calls" (Dhillon and Johnson, 1991). Jain (1987) also finds in favour of the ICH and affirms that there is in fact an informative value to the S&P 500 Index change announcements. He attributes this increased, permanent price change in response to additions to the Index to the markets' perception that the fact of being added to the Index certifies quality and reduces the associated risk.

Erwin and Miller (1998) find a decrease in the bid/ask spread of stocks added to the S&P 500. Along with the decrease in the bid/ask spread, which the authors attribute to informational efficiency caused by the stock's exposure to index arbitrage trading, Erwin and Miller notice a permanent increase in share price and trading volume. The latter observation was made only for non-optioned stocks, that is, only for those stocks not having options trading at the time of the addition to the Index. For stocks that had options traded, there was only a temporary price and volume increase.

2.1.2. The Price Pressure Hypothesis (PPH)

The PPH assumes that demand curves for securities are perfectly elastic. In other words, one can make large transactions (block trades) at the current market price. Any deviation from this perfect elasticity condition will cause only temporary volume and stock price changes.

Scholes (1972) was one of the first to notice that large transactions, in and of themselves, may affect security prices. That is, security prices may change, without any announcements of new information, due to less than perfectly elastic demand curves. As predicted by the PPH, Woolridge and Ghosh (1986) find that there is a temporary increase in trading volume. On the other hand, the price increase observed is permanent and therefore provides evidence against the PPH. Another study that finds against the PPH is that of Jain (1987) where the increase in price is not reversed in the period after the addition to the Index.

For a sample of additions and deletions between 1973-1983, Harris and Gurel (1986) find, in contrast to Woolridge and Ghosh (1986), significant price reversal. They therefore conclude in favor of the PPH. Lamoureaux and Wansley (1987) provide further support for the PPH. These authors find only temporary increase in volume which they attribute to a temporary increase in demand after the announcement date. As in Harris and Gurel's 1986 study, the stock price revaluation was found to be non-permanent. The reversal requires only 20 days to be complete.

The difference in price reversal findings of the different authors, and therefore support or rejection of the PPH, can be attributed to the fact that the authors used different time intervals in their studies.

Pruitt and Wei (1989) examine institutional ownership of the stocks being added or deleted from the S&P 500. Consistent with Harris and Gurel (1986) and Shleifer (1986), they document that price changes are a result of price pressure caused by a shift in the demand curve due to Index fund rebalancing. In addition, Pruitt and Wei (1989) find that from 1963 to 1983, the magnitude of positive abnormal returns associated with additions to the Index is increasing. This is rationalised by the increase in the indexing trend by large institutions as well as private entities.

Dhillon and Johnson (1991) find no evidence of price reversal in their 1984 to 1988 sample of changes to the Index. Furthermore, these authors find that bond and option prices of added and removed stocks behave in a similar manner as the stocks that

are added or deleted from the Index. This shows that even without the shift in demand caused by index funds, there is a change in the price and volume behavior of these related securities.

Erwin and Miller (1998) analyze the bid/ask spreads of the stocks as they leave or enter the Index. They find that only non-optioned stocks exhibit a significant decrease in the bid/ask spread. Optioned stocks experience an increase in trading volume and share price. Specifically, Erwin and Miller (1998) investigate the liquidity effect associated with the presumption that addition to the Index will cause a significant increase in trading and therefore may also cause a decrease in the bid-ask spread of the stock. The authors report that there is, in fact, a decrease in the bid-ask spread but only for those stocks which do not have listed options. The authors note that the decrease in the bid-ask spread is accompanied by a permanent increase in trading price and trading volume.

2.1.3. The Liquidity Cost Hypothesis (LCH)[4].

This hypothesis states that the change in liquidity, brought about by the stock's addition or deletion from the index has no effect on price. An indication that the hypothesis is violated should show a permanent shift in the price and liquidity of the stock.

As noted earlier, Woolidge and Ghosh (1986) find, as expected under the LCH, that there is a permanent price increase for stocks being added to the Index. Conversely,

however, the finding that the increase in trading volume is only temporary does not support the LCH. Harris and Gurel (1986) find against the LCH since the results show price reversal for announcements made in the years 1973 to 1983.

Lamoreaux and Wasley (1987) find only temporary increase in the volume and prices for a sample of additions to the S&P 500 between the years 1976 to 1985. These findings suggest that there are no lasting stock price effects due to the temporary increase in the stocks' liquidity. Dhillon and Johnson (1991) find a reversal in the stock price for the period 1978-1983 and therefore conclude in favor of the imperfect substitutes hypothesis (ISH). This hypothesis is essentially a line of reasoning which suggests that unless stocks, bonds and options are perfect substitutes, these securities should not behave similarly in response to addition or removal from the S&P 500.

The most recent article on the topic of changes to the S&P 500 is that by Erwin and Miller (1998). These authors find in support of a liquidity effect associated with additions to the S&P 500. Specifically, they find a decrease in the bid\ask spread for stocks that that did not have traded listed options. Furthermore, the authors find a significant and permanent increase in trading volume for the added companies and attribute this to the possibility that additions to the S&P 500 Index reflect enhanced stock liquidity.

[4] Also called the Imperfect Substitutes Hypothesis (ISH).

2.2. Empirical Evidence from The Post October 1989 Period.

Research in the years following the change in the announcement procedure has focused on the same issues as prior research. Lynch and Mendenhall (1997) are the only researchers that have studied the post October 1989 period changes to the Index to date. Their sample consists of the changes made to the S&P 500 from March 1990 to April 1995. By looking at different windows around the announcement and effective dates, the authors investigate all three hypotheses. Lynch and Mendenhall (1997) find against the semi-strong form market efficiency since the price reaction to the announcement of an addition or deletion from the index is not immediate. They also find in favour of the price-pressure hypothesis since the price and volume increases are subsequently completely reversed. They provide no evidence for or against the LCH and the ICH and suggest that these are only partial explanations for the announcement day positive price reaction for additions to the Index.

Beneish and Gardner (1995) examine the information costs and liquidity effects from a different perspective. They investigate the change in the stock price of firms that are added and removed from the Dow Jones Industrial Average (DJIA). They find that, unlike additions to the S&P 500, there is no abnormal price reaction for additions to the DJIA. Deletions from the DJIA, on the other hand, experience a price decline. The authors attribute the non-reaction of additions to the index to the fact that few fund managers index their holdings to the DJIA while the opposite is true for the S&P 500 Index. The authors further explain their asymmetric results as being consistent with the

information cost\liquidity argument in that investors demand a premium for holding stocks that have higher trading costs and relatively less available information.

3. Development of Hypotheses

There are many possible explanations for the price movements around the time of an index change. The price pressure hypothesis (downward sloping demand curves for stocks), the information content hypothesis, and the liquidity hypothesis have all been offered as possible explanations. The focus of this thesis is the information content hypothesis.

Mergers and acquisition cause most changes to the S&P 500 Index. This paper therefore looks at the date on which the transaction for a merger or a takeover seemed to be or was actually announced to be final, i.e., the date where the companies announced an agreement to merge, be acquired, or any other form of mutual consent was granted and signified that the transaction is certain to go through. When the deal seemed to require regulatory approval, and that approval may not have been forthcoming, the finalisation of the agreement was chosen to be the approval by the Federal Communications Commission (FCC) or the Justice Department (when applicable). Other identifiable dates for removal from the Index were the announcement of the intention to file for Chapter 11, the announcement of a major acquisition of an unrelated business or the announcement of the intention to spin-off a major part of the company. For a list of companies with

identifiable anticipation dates and the type of anticipation date associated with each please see Appendix 1a.

The S&P keeps the list of potential additions to the S&P 500 Index secret. Furthermore, in most cases, the added company is not from the same industry as the company that is deleted.

This paper does not attempt to identify potential candidates to the S&P 500, but examines instead the sample of actual additions as the potential candidates. First, we identify the date on which it would have been possible to predict that a company will be deleted from the Index (anticipation date). Second, we take the corresponding addition and look at its price reaction on this day. More specifically, the S&P provided us with a sample of additions and their corresponding deletions along with the reasons for these changes. It enabled us to identify a date when the market could determine with certainty that a company will be removed and another will be added to the Index. We refer to this date as the anticipation date (AT). Once the market realizes that there will be a vacant spot in the S&P 500, there is the possibility that some market participants would try to predict the corresponding addition. For example, take LIN Broadcasting which was acquired by McCaw Cellular Comm. Inc. The S&P announced on February 27th 1990 that the company will be removed and that Echo Bay Mines would be added in its place on March 2nd 1990. We identified the anticipation date for this change to be December 5th, 1989, when LIN Broadcasting agreed to be purchased by McCaw Cellular Comm.

This paper investigates the possibility that some market participants are able to anticipate additions such as that of Echo Bay Mines on the day of the closure of the deal between the two merging companies that caused the removal of LIN Broadcasting from the Index. Appendix 1a lists the anticipation sample, the anticipation dates as well as the type of announcement that was used to identify the anticipation date. In most instances, the anticipation date was identified for changes resulting from a merger or a takover. In some cases however, changes were a result of other reasons such as spin-offs or threat of Chapter 11 filings.

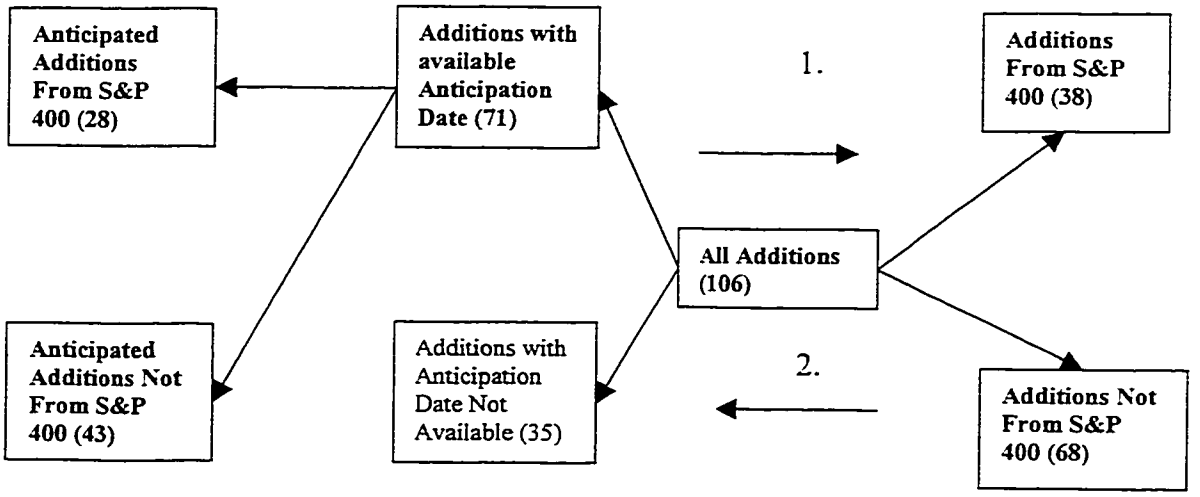
Consistent with previous research, this paper investigated the price reaction of firms added to the S&P 500 Index on the announcement date, as well as on the window extending from the announcement date to the effective date. The announcement date (AD) is the date on which the S&P releases the news of the impending change in its Index to the market. This is usually done after the close of trading on that day. Hence, any price reaction should be observed on day AD+1. The effective date (ED) is the date on which the change to the Index is actually made. This change usually takes place five working days after the announcement date. Appendix 1b contains the sample of all additions along with their announcement and effective dates.

A recent *Wall Street Journal* article raised the possibility that some of the additions to the S&P 500 are anticipated by Index followers (Ip, 1998). These Index followers are brokers that specialise in trading of Index additions and deletions. One of these brokers indicated that more additions come from the S&P 400 MidCap Index than

from any other identifiable source. The method of selection discussed by Ip suggests that Index followers anticipate additions that come from the same industry as the company deleted from the Index. Specifically, an example is given where if Gateway 2000 were to be removed from the Index, America Online would be a likely candidate from the S&P 400 to replace it in the S&P 500. In an efficient market, then, the stocks of potential additions to the Index should respond on the anticipation date if being part of the S&P 500 Index has informative value. Ip (1998) goes on to say that Index additions speculators claim to have a high accuracy rate (self reported) in determining the candidates for addition to the S&P 500.

To clarify the sub-sample arrangement, Figure 1 demonstrates how the overall sample of additions was broken-up into sub-samples. Specifically, the overall sample of additions was divided twice. The first division (in the direction of arrow 1) separated the overall sample of additions to the S&P 500 that came from the S&P 400 and those that did not come from the S&P 400 The motivation for this sample split-up will be discussed later on in this section. The second division (in the direction of arrow 2) separated the overall sample into the additions with an identifiable anticipation date and those that do not have an anticipation date. We then proceeded to identify, from the sample of additions with an anticipation date, the firms that came from the S&P 400 Index and those that did not come from the S&P 400 Index.

Figure 1. Diagram Describing the Sample Set-Up



Despite the subsequent price reversal after the effective change date (ED), all researchers to date document a sharp price increase of around 4% on (AD+1) for additions to the S&P 500 where AD is the announcement date. The liquidity cost, price pressure and information costs hypotheses are competing explanations that have been offered by past researchers. These possible explanations for the (AD+1) abnormal returns in the existing literature are discussed in detail in the related work section. In addition, no previous study has found evidence in support of leakage of information as to the potential additions from the S&P's index committee. This study examines this possibility by looking at the window (-2,0). If information leakage does indeed occur then this window will have a positive and significant cumulative average abnormal return (CAAR). In light of findings of extant studies that do not support this possibility, no such leakage is expected in the sample of additions investigated here.

Hypothesis 1a: Consistent with existing empirical studies, positive cumulative average abnormal returns (CAARs) are expected on (AD+1) for the complete additions sample as measured in the window (0,1).

Hypothesis 1b: Consistent with existing empirical studies, cumulative average abnormal returns (CAARs) for the window (-2,0) are expected to be zero.

For the sub-sample of additions without an identifiable anticipated date, it is expected that there will be a larger price reaction on AD+1 than for the sample of additions with an identifiable anticipation date. This is since some of the effect of the price reaction for the anticipated sample would have been mitigated by the anticipated demand of some market participants. That is, since some traders purchase the 'soon to be added' stock before the announcement day, some of the price effect for the anticipated additions on (AD+1) would have materialised on AT. To test this hypothesis, the return of the sample with the anticipation date is compared to that without an anticipation date (see figure 1 for the sub-sample structure).

Hypothesis 2: A larger (AD+1) reaction is expected for the sample of addition without an identifiable anticipation date vs. the sample with identifiable anticipation dates.

The next topic that this paper examines is if the market can identify the potential additions to the S&P 500 Index. The finding of a positive abnormal return on the AT would also indicate that there is the possibility of trading on this knowledge for those

who can predict the sample of additions to the Index. Holding the stock of the company to be added to the Index in the period between the announcement and effective date would result in an abnormal return that previous authors have shown to be large and significant, providing profit opportunity even after accounting for transaction costs. Since most of the abnormal price reaction occurs on the announcement day, speculators that are able to anticipate additions to the Index can stay a step ahead and buy the stock before the announcement day. In a sense, these speculators may be able to benefit from the full price effect of additions to the Index while others who purchase the stock after the announcement date profit only from the residual price increase, after the announcement date.

In many instances, when a firm is added to the S&P 500 Index, it is already part of another Index tracked by the S&P. Most of the firms that are a part of another S&P index come from the S&P 400 MidCap Index. The sample of anticipated additions is therefore also separated into two sub-samples. The first partition is done according to the provenance of the stock, specifically; if it came from the S&P 400 MidCap Index or not (see Figure 1 for the sub-sample structure). As discussed earlier, S&P 400 additions are more likely to be anticipated than additions that come from outside the index (Ip, 1998). Therefore there should be a bigger AT price reaction for the sample from the S&P 400.

Hypothesis 3a: A positive, abnormal price reaction of the anticipated additions is expected on the anticipation date [window (0,1)].

Hypothesis 3b: The sub-sample of anticipated additions from the S&P 400 is expected to have a greater positive abnormal return reaction on AT than anticipated additions not from the S&P 400.

The window (AT,AD) is expected to have positive CAARs in response to the approaching announcement date by the S&P that the company in question will be added to the Index. This expectation is based on the assumption that there is an identifiable anticipation date and that some market participants are able to predict that one company will be deleted and that another (which is known to them) is to replace it in the Index. A positive run-up in prices (from AT up to the AD) would be indicative that there is either leakage of information or that the market can identify the added companies in advance. A positive run-up also indicates that there is room for seeking to determine the composition of the pool of potential candidates that the S&P does not wish the market to know. In other words, a positive (AT,AD) window would indicate that there are some analysts that are able to anticipate the potential candidates for addition to the Index. Analysts may not be able to identify the exact date on which the company will be added. They may, on the other hand, be able to know that certain companies will be added in the period between the anticipation date and the announcement date.

Hypothesis 4: The full anticipated additions sample is expected to have positive CAARs for the window (AT,AD).

The next hypothesis deals with the price movements between the announcement date to the effective date window (AD,ED). CAARs for the full additions sample and the sample with anticipation dates are analyzed. Analogous to hypothesis 2, it is expected that there will be a smaller (AD,ED) CAAR for the sample of anticipated additions to the S&P 500. The reasoning behind this expectation is similar to that made for hypothesis 2 where some of the (AD,ED) effect should be mitigated by the earlier abnormal price reaction on AT as well as possibly over the anticipation date to the announcement date window (AT,AD). Even if hypothesis 2 is not supported there is still the possibility that the abnormal price reaction may be present between the anticipation and announcement dates (as predicted by hypothesis 4). The following hypothesis is conditional upon finding in support of either hypothesis 2 or hypothesis 4 which states that there should be significant and positive CAARs for the anticipation sample in the window (AT,AD).

Hypothesis 5: The sample of additions with anticipation dates is expected to have smaller announcement to effective date (AD,ED) CAARs than those of the sample of additions without anticipation dates.

Previous research has demonstrated that analysts give index stocks more attention and coverage. This increased scrutiny causes more information to be available about these companies. In addition, membership in an index such as the S&P 500 also causes an increased liquidity simply due to the larger trading volume and smaller bid/ask spread. The samples of additions from the S&P 400 are expected to have lower positive CAARs for the window (AD,ED) than the samples not from the S&P 400. The reasoning behind

this hypothesis is that the S&P 400 companies already enjoy some of the liquidity and analysts' attention given to index stocks. After an S&P 400 stock is moved to the S&P 500 there will be an increase in liquidity and in market scrutiny but to a lesser extent than that of a company that is added from outside the S&P family of indices.

Hypothesis 6a: The sample of additions from the S&P 400 is expected to have lower positive CAARs for the window (AD,ED) than those for the sample of additions not from the S&P 400.

Hypothesis 6b: The sample of anticipated additions from the S&P 400 is expected to have lower positive CAARs for the window (AD,ED) than those for the sample of anticipated additions not from the S&P 400.

In addition to investigating the (AD,ED) and the (AT,AD) windows, this study also examines the performance of the companies added from the S&P 400 as well as the companies not from the S&P 400 one year before and one year after the change date. This analysis is carried out to determine if there is persistence in the performance of the sub-sample of companies from the S&P 400 vs. firms not from the S&P 400. This analysis is essentially a backward extension of the (AT,AD) window further backwards to determine if the performance of the added firms is a selection factor in the S&P's choice of additions to the S&P 500 Index. The window that extends one year after the effective date (ED÷260) is used to determine if the selection of a particular group of firms, such as those from the S&P 400, to be added to the S&P 500, has repercussions on their future performance.

4. Sample and Data

4.1. Sample of Additions

A sample of 149 additions to the S&P 500 from March 1990 to December 1997 was obtained from the Statistical Services department at the Standard and Poor's Corporation. Most of these changes were a result of the announcement that a firm from within the S&P 500 will merge or will be bought by another company (from inside or out of the Index). Once the firms merge, the company that was in the Index is removed and another takes its place. The Standard and Poor's Corporation provided us with both announcement and effective dates of the change as well as the reason for which the change in the Index occurred (see Appendix 1b).

Two companies had to be excluded from the sample since the S&P could not provide us with announcement dates. Nineteen firms that were added to the Index had to be excluded from further analysis for two reasons. First, the added companies were newly formed companies for which historical return patterns did not exist[5] and, second, these changes to the Index were due to the split-up of an existing company and the two new parts or one of its components are added to the Index. This type of change would not result in Index trading since the old shares would be automatically converted to the

[5] Take for example the addition of C&S/Sorvan Corp in 1990. This addition to the index was a result of the merger of Sorval Financial and Citizens & Southern Corp. The two merging companies no longer exist as separate entities and the new company does not have a historic stock price history prior to its addition to the index.

shares of the new companies[6]. Further exclusions were made due to the presence of company specific announcements (such as earnings, dividends, and other events likely to cause abnormal price reaction) that may have contaminated the effect on the anticipation date or the announcement date on stock prices. One additional company was removed since the announcement day and the effective day coincided therefore not permitting a clear-cut conclusion as to the reason for any abnormal return occurrence on this date. This elimination process left us with a sample of 106 additions. For this sample of additions we could identify anticipation dates for 72 firms and an additional company was excluded from this sample due to returns unavailability.

The S&P's Compustat database was used to identify those companies that were moved from the S&P 400 MidCap Index to the S&P 500. This sample consisted of 68 firms for the full sample of additions and 28 firms for the sample of additions with available anticipation dates.

4.2. Data

Daily stock returns for our samples of additions are obtained from the Center for Research in Security Prices (CRSP) daily tapes. The CRSP value weighted index is used as the market portfolio in the abnormal return calculations since the S&P 500 is a value-weighted index.

[6] For example take the removal of U.S. West Media Group. and the addition of U.S. West Media Group (new) and U.S. West Communications. The two new companies did not exist as separate entities with stock price histories prior to their addition to the index.

The Wall Street Journal Index was used to identify the anticipation dates as well as other firm specific announcements occurring on or around the anticipation or announcement dates.

5. Methodology

The anticipation date (AT) was set as the date on which a specific news item was found in *The Wall street Journal Index* that made it certain that a particular firm would be deleted from the S&P 500 Index in the days to come. For mergers and acquisitions, the AT date was set as the date on which the companies agreed to merge, the date where a reluctant party accepted the merger or the date on which both parties simultaneously announced the transaction to be complete. In the case of bankruptcies, the AT was chosen as the date where the company filed for Chapter 11 or merely threatened to do so. In cases where the approval of a regulatory body (such as the Justice department) was required and such approval may not have been forthcoming, the date of approval was set as the AT.

This paper follows the work of Lynch and Mendenhall (1997) in establishing the dates to be used as the event dates for the announcement date (AD) and effective date (ED). Specifically, since the announcement of the impending change to the Index is made only after the end of the trading day, AD is considered as the announcement date but it is acknowledged that (AD+1) is the real event date in terms of price change. Similarly, since the change to the Index is made only after the end of the trading day, ED

is chosen as the effective change day but the date (ED+1) is considered to be the date on which the change to the Index actually occurs. Any price reaction for the AT is expected to occur on the AT itself since this is the date on which the specific news was published in *The Wall Street Journal*. In order to avoid firm specific announcements around the anticipation and announcement dates, a seven-day window centred around each date. Companies having firm specific news in that seven-day period were excluded from the study.

An event-study methodology is used with both one and two event dates. The one event-date procedure in used for anticipation (AT) and announcement (AD) date analysis while the two event-date procedure is used for examining event windows (AT,AD) and (AD,ED). The two event-date methodology is also used for analysing (AD+1,ED+260). This window determines if there is a pattern of performance for any of the sub-samples in the two hundred and sixty days following the effective day. The estimation period for these event windows was 140 days in length ending 40 days before the event date. The window (AD-260,AD-1) is examined in order to determine if there is a pattern of performance in any of the sub-samples one trading year prior to addition to the Index. The estimation length of this window was 100 day in length ending 10 days before the event period. Cumulative average abnormal returns were calculated for the windows (-5,5), (-2,2), (-1,0), (0,0), (0,1), (-2,0), and (0,2), for all sub-samples to check for abnormal price reactions on and around the announcement and anticipation dates. These windows are reported in Panel b. of appendices 2 through 7.

5.1. Single Event Date Methodology[7]

This method uses the market model abnormal returns where security returns are assumed to follow a single factor market model,

$$R_{jt} = \alpha_j + \beta_j R_{mt} + E_{jt}$$

where R_{jt} is the rate of return of the j^{th} firm on day t; R_{mt} is the return on the market on day t; E_{jt} is the random value with an expected value equal to zero, and is assumed to be independent of other error terms, uncorrelated with the market return and not autocorrelated with a constant variance. β_j is a sensitivity parameter measuring the effect of the market movement on the return of security j.

The abnormal return of company j at time t is defines as:

$$A_{jt} = R_{jt} - (\hat{\alpha}_j + \hat{\beta}^*_j R_{mt})$$

Where, $\hat{\beta}^*_j$ is the Scholes-Williams beta estimator (Scholes and Williams (1977)) and given by:

$$\hat{\beta}^*_j = (\hat{\beta}^-_j + \hat{\beta}_j + \hat{\beta}^+_j)/(1 + 2\hat{\rho}_m),$$

where $\hat{\beta}^-_j$ is the OLS slope estimate from the simple linear regression of R_{jt} on R_{mt-1}, $\hat{\beta}^-_j$ is the OLS estimate from the regression of R_{jt} on R_{mt-1}, and $\hat{\rho}_m$ is the estimated first-order autocorrelation of R_m.

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[7] For more details, please see: "Eventus: Users Manual", Cowan Research Corp, Http:// www: eventstudy.com, pp. 97-101.

Test statistics are computed using Patell's (1976) method. Under the null, each A_{jt} has zero mean and constant variance of σ^2_{Ajt}. The maximum likelihood estimator of the variance is:

$$S^2_{Ajt} = S^2_{Aj} [1 + (1/D_j) + \{(R_{mt} - \bar{R}_m)^2 / \sum_{k=1}^{Dj} (R_{mk} - \bar{R}_m)^2\}]$$

where

$$S^2_{Aj} = \sum_{k=1}^{Dj} A^2_{jk} / (D_j - 2),$$

R_{mt} is the observed return on the market index on day t, $\bar{R}_m$ is the mean market return over the estimation period and D_j is the number of non-missing trading day returns used for estimating the parameters of firm j.

The standardised abnormal return is defined as

$$SAR_{jt} = A_{jt} / S_{Ajt}.$$

Under the null, each SAR_{jt} follows a Student's t distribution with $D_j - 2$ degrees of freedom. Summing the SAR_{jt} across the sample, we get for day t,

$$TSAR_t = \sum_{j=1}^{N} SAR_{jt}$$

The expected value of $TSAR_t$ is zero and its variance is

$$Q_t = \sum_{j=1}^{N} (D_j - 2) / (D_j - 4).$$

To test the null hypothesis that $CAAR_{T1,T2} = 0$ the following test statistic is used

$$Z_{T1,T2} = (1 / \sqrt{N}) \sum_{j=1}^{N} Z'_{T1,T2},$$

where

$$Z^{j}_{T1,T2} = (1 / \sqrt{Q^{j}_{T1,T2}}) \sum_{t=T_1}^{T_2} SAR_{jt},$$

and

$$Q^{j}_{T1,T2} = (T2 - T1 + 1)\, D_j - 2 / D_j - 4$$

Under the assumption of cross sectional independence the firm's test statistic $Z^{j}_{T1,T2}$ and additional conditions described in Patell (1976), $Z_{T1,T2}$ follows the standard normal distribution under the null.

5.2. Two Event Date Methodology

The two-event date methodology differs from the first in that it cumulates returns over intervals that are security specific. The event window is no longer defined as related to a single event period but as the number of trading days between the anticipation date and the announcement date or between the announcement and effective dates. This type of test is required since the (AT,AD) windows vary for each company and range in length from one day to one year. The (AD,ED) window also varies in length in the range of one day to more than one month.

The following is the cumulative abnormal return for a firm j,

$$CAR_{T1j,T2j} = \sum_{t=T1_j}^{T2_j} A_{jt},$$

where $T1_j$ and $T2_j$ are the two event dates specific to firm j. Let L_j be the number of trading days in the event window of firm j

$$L_j = T2_j - T1_j + 1.$$

The Z statistic used for testing the significance of $CAR_{T1j,T2j}$ is

$$Z_j = \sum_{t=T1_j}^{T2_j} SAR_{jt} / [L_j (D_j - 2 / D_j - 4)]^{1/2}.$$

Assuming cross sectional and temporal independence, the test statistic for $CAAR$ is

$$CAAR = \sum_{j=1}^{N} CAR_{T1j,\ T2j}$$

And the Z-statistic is computed as,

$$Z_{CAAR} = N^{1/2} \sum_{j=1}^{N} Z_j.$$

6. Results

6.1. Stock Price Response around the Announcement Date

The results for the event studies on and around the announcement date of the complete additions sample (Appendix 2), the sample of firms with an identifiable anticipation date (Appendix 3) and the sample of added firms without an identifiable anticipation date (Appendix 4) are presented in the Appendices section. Panel a. of each appendix gives the average abnormal returns around the event day (announcement date). More specifically, Panel a. lists (from left to right) the day relative to the event day, the average abnormal return (AAR), the median abnormal return (both expressed in percentages), the Z-statistic, positive vs. negative number of occurrences on the particular day and the level of significance. Panel b. of Appendices 2-4 reports the cumulative and median average abnormal returns for the windows (-5,5), (-2,2), (-2,0), (-1,0), (0,0), (0,1), and (0,2), as well as the sample Z test statistic, the positive vs. negative occurrences and their significance level. These windows were investigated in order to examine the price reaction on, immediately prior to and immediately after the event dates.

The overall sample of 106 clean additions (Appendix 2), and in fact all of its subsamples (see Appendices 3, and 4), to the S&P 500 showed significant abnormal returns on AD+1 thereby confirming hypothesis 1a. In fact, the results presented in Appendix 2 show the price reaction to the announcement of addition to the S&P 500 to be 4.42% with a Z statistic of 18.26 that is significant at the 0.1% level (on AD+1). The

number of positive abnormal observations is greater than the number of negative ones (98:8) at the 0.1% significance level as well. The results show that there is no reaction on the day of the announcement itself. As expected in hypothesis 1a, all of the price reaction occurs on the day after the announcement (AD+1) and not on AD (day 0 in panel a.), since the announcement is made after the close of trading on AD.

The cumulative average abnormal returns (in Appendix 2. Panel b.) for the pre-announcement window (-2,0) shows that there is no anticipation in the days immediately preceding the announcement. This is consistent with previous findings that there is no leakage of information pertaining to the imminent changes in the S&P 500. Furthermore, the window (-5,5) has a cumulative average abnormal return of 5.13% (significant at 0.1%) where all of the AAR activity occurs on and after AD+1. These findings are consistent with hypothesis 1b, indicating that there is no leakage of information prior to the actual announcement by the S&P.

Hypothesis 2 states that there should be a smaller AD+1 CAAR reaction for the sample with an identifiable anticipation date than for the sample of additions without an identifiable anticipation date for window (0,1). The results, presented in Appendix 3 and 4 for the addition with an anticipation date and for the additions without an anticipation date (respectively), show that the sample of additions with an anticipation date has a greater CAAR for the (0,1) window than that of the sample without an anticipation date. Specifically, the sample with an anticipation date in Appendix 3 has a (0,1) window CAAR of 4.73% and the sample without anticipation dates in Appendix 4 has a (0,1)

CAAR of 3.53% (both significant at 0.1%). The t-test for a difference between the two windows, however, indicates that the means are not different with a p-value of 0.191. The window (-5,5) difference between the two samples is 2.07% (5.74%-3.67%) in favor of the anticipated additions sample. Here again, there is no significant difference between the two means (p-value of 0.175). To conclude, we fail to find evidence consistent with hypothesis 2. The sample without an anticipation date does not have a smaller CAAR for the announcement date. These results indicate, as hypothesized, one of two possibilities. First, it is likely that the market does not identify the additions to the S&P 500 Index. Consequently, investors do not buy the stock on or after the AT and therefore the price reaction for the full sample of additions is not smaller than that of the anticipated sample. Second, the anticipation dates that were identified are misspecified and therefore the price reaction occurs on another date. The following few results will clarify why hypothesis 2 was not supported.

6.2. Stock Price Response around the Anticipation Date

The results for the event studies on and around the anticipation date of the anticipated additions sample (Appendix 5), the sample of anticipated additions from the S&P 400 Index (Appendix 6) and the sample of anticipated additions not from the S&P 400 (Appendix 7) are presented in the appendices section. Panel a. of each appendix gives the average abnormal returns around the event day (anticipation date). More specifically, Panel a. lists (from left to right) the day relative to the event day, the average abnormal return (AAR), the median abnormal return (both expressed in percentages), the Z-statistic, positive vs. negative number of occurrences on the particular day and the level

of significance. Panel b. of Appendices 5-7 reports the cumulative and median average abnormal returns for the windows (-5,5), (-2,2), (-2,0), (-1,0), (0,0), (0,1), and (0,2), as well as the sample Z test statistic, the positive vs. negative occurrences and their significance level. These windows were investigated in order to examine the price reaction on, immediately prior to and immediately after the event dates.

For the anticipated additions sample of 71 firms (Appendix 5) the results show no abnormal returns on or around the AT. Specifically, an insignificant CAAR of 0.13% for the window (0,1) is found. In addition, Panel b of Appendix 5, shows that there is no significant CAAR to report over any of the windows other than the (-5,5) window, which is negative (-1.07) and only significant at the 10% level. The number of positive versus negative occurrences (29:42 respectively) is also not significantly different.

These findings seem to indicate that the market cannot recognize, at the time of the AT, which company is going to be added in place of the one being deleted. From this, one can draw that, although some Index followers may potentially identify the candidates for addition to the Index, the trading activity at the time of the AT is not large enough to cause a significant price reaction. Another possibility is that these Index followers take a positive position in the stock sometime between the AT and the AD (this will be examined in the next section). Since no significant reaction is found on the AT, there should not be a different CAAR for the full additions sample vs. the sample of anticipated additions on the announcement date. In fact, we find (Appendix 3) that the anticipated additions sample has a CAAR of 4.73% on the (AD+1), which is very close to

the 3.53% of the sample of additions without an anticipation date (Appendix 4). This 1.20% difference in means in favor of the anticipation sample is not significant as indicated by a t-statistic of -1.3198 and a p-value of 0.1906. This portion of our results finds against hypothesis 3a, indicating that there is no abnormal price reaction on the anticipation date. In addition to finding against hypothesis 3a, these results explain why hypothesis 2 was not supported. More precisely, the (AD+1) price reaction for the sample with anticipation dates and the sample of additions without anticipation dates fails to differ significantly since there is no abnormal price reaction on AT which was a requirement of hypothesis 2.

Besides the overall sample of anticipated additions, all the anticipated additions that came from the S&P 400 and those that did not come from the S&P 400 were identified. The sample of anticipated additions from the S&P 400, based on hypothesis 3b, was expected to have a smaller CAAR reaction on the anticipation date than the CAARs reaction for the additions not from the S&P 400. Contrary to our expectations, we see that the CAARs of the sample of anticipated additions from the S&P 400 (Appendix 6) are similar to those of the sample of anticipated additions not from the S&P 400 (Appendix 7). More specifically, there is an insignificant CAAR of –0.36% for the anticipated additions from the S&P 400 vs. a insignificant CAAR of 0.45% for the sample of anticipated additions not from the S&P 400 (t-statistic shows no significant difference with a p-value of 0.1605). This lack of difference in the abnormal return reaction of the anticipated samples both from and not from the S&P 400 fails to support hypothesis 3b. Despite the fact that companies from the S&P 400 are seen by the market

as the most likely candidates for addition to the S&P 500 (Ip, 1998), the price reaction on the AT date are in the opposite direction than that which was hypothesised.

The anticipation period varies in length between one day and more than one year separating the AT and AD events. To determine if the length of the (AT,AD) interval is important in determining if there is an abnormal price reaction on AT, we divided the sample of all additions as well as the sample of anticipated additions into three groups. The division was made according to a maximum (AT,AD) period of six, three, and two months. The results of these tests were similar to those of the overall unrestricted samples presented. Hence, these results are not reported in this study.

6.3. Stock Price Response between the Anticipation Date and the Announcement Date [(AT,AD)Window]

Table 1 summarizes the AT,AD window results for the sample of anticipated additions as well as the sub-samples of anticipated additions from and not from the S&P 400. Table 1 also shows the t-test and medians test results for the difference in means between the latter two sub-samples.

Table 1. Anticipation to Announcement Date CAARs, Test for Equality of Means and The Medians Test.

	AT to AD Window Results			Test for Equality of Means		Medians Test	
Sample	Sample Size	CAAR(%)	Positive: Negative	t-stat	p-value	Z	p-value
Anticipated Additions	71	-2.78	31:40				
Anticipated from S&P 400	28	-5.9*	7:21>	-1.124	0.267	-1.912	0.056
Anticipated not from S&P 400	43	-0.8	23:20				

*, >, Significant at 5% level.

In contrast to what was proposed in hypothesis 4, the anticipated sample has a negative (insignificant) CAAR of –2.78% over the (AT,AD) window. This result is not as predicted by hypothesis 4 in two ways. First, the CAARs are not significant, therefore demonstrating that there is no anticipation activity leading up to the announcement date. This result explains why no difference was observed in (AD+1) and (AD,ED) CAARs for the sample with anticipation dates as opposed to the sample without anticipation dates (hypothesis 2 and hypothesis 5 respectively).

More interestingly, we find that the anticipated sample of 28 companies from the S&P 400 has a large negative CAAR reaction (-5.9%) which is significant at the 5% level. The t-test for the difference in means shows that there is an insignificant difference between the two sub-samples from and not from the S&P 400. The medians test, on the other hand, indicates that the two medians are different at a 5.59% level of significance. This occurrence provides mixed support to the possibility that there is a run-down in price for those companies that originate from the S&P 400. This run-down occurs

between the date of anticipation and the announcement date. The above finding contradicts the notion that S&P 400 companies are identifiable candidates for addition to the S&P 500. Support for this hypothesis would be the observation of a positive run-up in prices between AT and AD. Again, the market does not seem to recognize this potential of S&P 400 companies. Furthermore, after such a run down in prices, we would expect the market to react positively to the announcement that these firms will be added to the most popular and widely followed of the S&P's indices.

6.4. Stock Price Response Between the Announcement Date and the Effective Date [(AD,ED) Window]

In this section, findings for the announcement to effective date (AD,ED) window are reported for all samples. Table 2 summarises these findings for the full sample of additions, the anticipation sample, the sample of additions from the S&P 400 as well as the sample of additions not from the S&P 400. In addition, there is the anticipated sample from the S&P 400 as well as the sample of anticipated additions not from the S&P 400.

Table 2. Announcements to Effective Date CAARs, Test for Equality of Means and The Medians Test.

	AD to ED Window Results			Test for Equality of Means		Medians Test	
Sample	Sample Size	CAAR(%)	Positive: Negative	t-stat	p-value	Z	p-value
All Additions	106	7.01***	95:11>>>				
Anticipated Additions	71	7.63***	65:6>>>	-1.406	0.164	-1.763	0.078
Non-Anticipated Additions	35	5.75***	30:5>>>				
Additions from S&P 400	38	5.89***	34:4>>>	-1.343	0.183	-1.683	0.092
Additions not from S&P 400	68	7.56***	61:7>>>				
Anticipated from S&P 400	28	5.53***	25:3>>>	-2.458	0.017	-2.359	0.018
Anticipated not from S&P 400	43	9.02***	40:3>>>				

***, >>>Significant at 0.1% level.

As in previous studies, such as Lynch and Mendenhall (1997), significant and positive cumulative average abnormal returns are found between the AD and ED for the overall sample of additions to the S&P 500 as well as for all of its sub-samples. Stated in more detail, for the sample of additions with an anticipation date, we find a CAAR of 7.63% at a significance level of 0.1%. The sample without anticipation dates had a smaller CAAR (5.75%) over the same window. The t-test for equality of means indicates that the two samples have equal means with a t-test p-value of 0.164. This result provides evidence against hypothesis 5. There seems to be no difference in means which is due to the presence of anticipation date abnormal positive returns that would mitigate some of the (AD,ED) positive CAARs. For this reason, there is no difference between the (AD,ED) CAARs for the sample with anticipation dates and that of the sample without anticipation dates.

The results in Table 2 indicate that the additions (both in the overall and anticipation sample) from the S&P 400 do not have as large of a price reaction as the additions not from the S&P 400. Specifically, the additions from the S&P 400 have an AD to ED CAAR of 5.89% while that of the added companies not from the S&P 400 have a CAAR of 7.56%. This difference in means is not significant as demonstrated by the t-test statistic of -1.343 and a p-value of 0.183. The medians test indicates that the sample medians are marginally different with a p-value of 0.0923. This insignificant difference in means does not support hypothesis 6a which predicted a smaller (AD,ED) CAAR effect for the sample from the S&P 400 compared to firms not from the S&P 400.

The same pattern of results is apparent for the sample of anticipated additions from the S&P 400 and the anticipated additions not from the S&P 400. In fact, the difference in means is more pronounced in the anticipation sample. Specifically, there is a 3.49% premium in CAAR for the (AD,ED) window of companies that do not come from the S&P 400. This difference in CAARs is confirmed by a t-statistic of –2.458 which is significant at a 1.65% level, thereby providing support for hypothesis 6b.

Investors as well as indexers seem to place more weight, and give greater importance, to the addition of companies that come from outside the S&P 400 Index. This can be explained in the context of the information cost and liquidity cost hypotheses (ICH). Firms that are already in the S&P 400 enjoy some of the added coverage by analysts and increased liquidity since the S&P 400 is one of the S&P family of indices

that are becoming more widely followed as the indexing trend continues to grow. This smaller CAAR over the (AD,ED) window is most likely independent of the anticipation experiment since the same type of reaction is observed when both the overall sample of additions as well as for the anticipated sample are split into the sub-samples that come from the S&P 400 and those that do not.

In addition, by examining the difference in CAARs for the companies from the S&P 400 vs. those not from the S&P 400 from the perspective of the liquidity cost hypothesis, it can said that the S&P 400 companies already have some liquidity advantage over those not in the Index. From the ICH perspective, S&P 400 stocks are also more widely followed and scrutinized by the market since more information is available about those companies comparative to companies not in one of the S&P (or other) indices. This should result in a greater gain in information to companies not from the S&P 400 than for companies from the S&P 400. In fact, some of the added companies that were not included in the S&P 400 may have lost some of their "neglected firm" (Ohlson, 1979) status. Investors recognize the changed informative status of the company and demand less of a premium for holding it. The result of both the gain in liquidity and the increase in information available about the company leads to the recognition by the market that there is a greater benefit to the companies which had not come from the S&P 400 Index. Consequently, the market prices the addition of companies not from the S&P 400 to a greater extent than it does for the additions from the S&P 400.

6.5. Stock Price Change 1 Year before the Announcement Date.

Faced with the significant run-down in price of the sample of anticipated additions from the S&P 400, this section investigates the price change of the samples of additions (anticipated and not anticipated) from the S&P 400. Specifically, the topic of interest is whether there is a pattern of negative performance of companies that are added from the S&P 400 vs. companies that are added from outside of the S&P 400. This possibility is investigated by examining the CAARs for the window commencing two hundred and sixty trading days before the announcement date and ending one day before the announcement date (AD-260,AD-1). Table 3 summarizes the results for the full and the anticipated samples as well as for the four sub-samples and reports the test for the difference in means as well as the medians test along with its p-value.

Table 3. CAARs for 260 Trading Days Prior to the Announcement Date, Test for Equality of Means, and the Medians test.

	AD-260,AD Window Results			Test for Equality of Means		Medians Test	
Sample	Sample Size	CAAR(%)	Positive: Negative	t-stat	p-value	Z	p-value
All Additions	101	2.25	54:44)				
Anticipated Additions	71	4.23	41:30				
Additions from S&P 400	38	-7.07$	18:20	-1.048	0.299	-1.539	0.124
Additions not from S&P 400	63	8.11*	39:24>				
Anticipated from S&P 400	28	-0.85	13:15	-0.114	0.910	-0.829	0.409
Anticipated not from S&P 400	43	6.19$	28:15>				

*, >, Significant at 5% level. $,), Significant at 10% level.

The results presented in Table 3 indicate that there is a significant (at the 10% level) negative CAAR of 7.07% for the sample of additions from the S&P 400. The number of positive vs. negative observations is not different at any level of significance. The sample of additions not from the S&P 400 has a significant (at 5%) CAAR of 8.11% which is confirmed by the significantly larger number of positive observations (at the 5% level). In contrast, the t-test does not confirm, at any level of significance, that there is difference in means between the sample of additions from the S&P 400 vs. that not from the S&P 400.

The anticipated sub-samples behave in a similar manner to the samples above. Where, on one hand, those observations from the S&P 400 show no significant CAARS (-0.85%) the sample of anticipated additions not from the S&P 400 has a significant (at 10%) CAAR of 6.19% (with a significantly higher number of positive observations). The t-test for the difference in means does not confirm a significant difference in the CAARs of the two sub-samples.

To state the results differently, one can say that the S&P may be adding winners from outside of the S&P 400 to its larger S&P 500 Index. On the other hand, the sample of additions from the S&P 400 significantly under-perform in the one year period prior to its additions to the S&P 500. So the S&P can be seen as adding S&P 400 losers to its larger Index, perhaps in hopes of boosting their performance. Nevertheless, these results are confirmed neither by the means nor by the medians tests for significant differences between the sub-samples.

6.6. Stock Price Change 1 Year after the Effective Date.

This section examines if the added companies from the S&P 400 perform better after they are added to the S&P 500. This possibility is investigated by examining the CAARs for the window commencing on the announcement date plus one day and ending two hundred and sixty trading days after the effective date (AD+1,ED+260). Table 4 summarizes the results for the full and anticipated samples as well as for the four sub-samples and reports the test for the difference in means as well as the medians test and its p-value.

Table 4. CAARs for the Window (AD+1,ED+260), Test for Equality of Means, and the Medians Test.

	AD+1,ED+260 Window Results			Test for Equality of Means		Medians Test	
Sample	Sample Size	CAAR(%)	Positive: Negative	t-stat	p-value	Z	p-value
All Additions	85	-9.28*	23:33				
Anticipated Additions	56	-9.89*	22:34				
Additions from S&P 400	32	-11.79**	12:20	-0.743	0.461	-0.721	0.471
Additions not from S&P 400	53	-5.96	20:23				
Anticipated from S&P 400	22	-16.44**	9:13	-1.463	0.152	-1.150	0.251
Anticipated not from S&P 400	34	-4.39	13:21				

*, Significant at 5% level. **, Significant at 1% level.

The results in Table 4 demonstrate that the additions from the S&P 400 under-perform relative to their non-S&P 400 counterparts even in the period following the addition to the S&P 500 Index. The sample of additions from the S&P 400 has a

significant (at 1%) CAAR of –11.79% while the additions not from the S&P 400 have no significant abnormal returns over the same window. In addition, there is a similar reaction for the anticipation sub-samples. Specifically, there is a significant (at 1%) CAAR of –16.44% for the additions from the S&P 400 while the additions not from the S&P 400 show no significant reaction. The means and the medians difference tests for the comparison of the four sub-samples do not confirm that the differences in means reported above are statistically significant.

7. Conclusions

The abnormal positive price reaction, on the announcement date, of companies that are added to the S&P 500 has been a topic of interest for research in the last two decades. Many theories, that draw from different areas of finance, have been proposed as partial and competing explanations for the abnormal positive returns that occur on the announcement of the change. In addition, previous studies document positive cumulative abnormal returns between the announcement and effective dates of change to the Index.

This paper uses a standardized event study methodology to find cumulative average abnormal returns (CAARs) and average abnormal returns (AARs) for the event windows of the sample of companies that were added to the Index between April 1990 and December 1997.

This methodology is used to investigated the issue of additions to the Index from two new perspectives. First, it examines if the market is able to identify added companies before hand, that is, before the announcement of a change to the Index by the S&P. Second, it investigated the difference in the abnormal return pattern of companies that are added to the S&P 500 from the S&P 400 MidCap Index.

The existence of the first possibility has been suggested in a recent article in the *Wall Street Journal* (Ip, 1998) where the author states that there are more additions to the S&P 500 that come from the S&P 400 than from any other identifiable source and that

some analysts are able to predict the additions to the S&P 500. In order to test for this possibility, an anticipation date is identified which is defined as the date on which the market can anticipate that an S&P 500 member will be removed from the Index. The corresponding addition is known, however, only after the S&P makes the change announcement. This study examines the abnormal return pattern (hypothesized to be positive and significant) of the added company (which is known ex-post) on the anticipation date. More specifically, the event window between the announcement and effective dates (AD,ED) as well as the window extending from the anticipation date to the announcement date (AT,AD) are tested for the presence of cumulative average abnormal returns. If the market is able to identify the additions to the Index then a positive cumulative abnormal return is expected for the anticipation date as well as for the window (AT,AD). The most likely additions to the S&P 500, which are the additions that come from the S&P 400 are expected to have even greater price reactions on the AT and the (AT,AD) window.

The results of this portion of the study confirm the well-known fact that the list of additions to the S&P 500 is confidentially guarded and that there is no leakage of information from the S&P Corporation. No CAARs are found for the window (–2,0) where day 0 is the announcement date. This study also confirms the positive AD+1 and (AD,ED) positive CAARs documented in previous research.

With respect to the anticipation experiment, contrary to expectations, a CAAR of –2.78% (non-significant) is found for the window (AT,AD). This run-down in prices

shows that the market does not identify S&P additions before the actual announcement is made by the S&P. This run-down in prices also seems to indicate that the S&P is choosing bad recent performers to add to the S&P 500, perhaps in the hope of boosting their performance. We also observe a significant (at 5%) (AT,AD) CAAR of –5.9% for the anticipated sample from the S&P 400. Again, this seems to indicate that the S&P includes recent bad performers into its 500 Index.

The second new perspective investigated by this study is the issue of additions from the S&P 400 Index. This study finds that added companies from the S&P 400, both for the complete sample as well as for the anticipated sample have similar AD+1 reactions but differ substantially in their (AD, ED) CAARs. For the complete sample of additions, there is a 1.67% higher CAAR for companies not from the S&P 400. The same pattern is documented for the anticipated sample. Specifically, we observe a 3.49% higher CAAR for the anticipation sample not from the S&P 400.

The possible reasons for such a difference in results could be attributed to the smaller gain in liquidity (LCH) and market information (ICH) for companies from the S&P 400. The increase in liquidity for a company added not from the S&P 400 is greater than the increase for a company added from the S&P 400 since S&P 400 membership already provides some liquidity for the stock. Second, the increased surveillance by market analysts, causes the amount of information available about the added company to increase and therefore leads investors to require less of a "neglected firm premium" (Ohlson, 1979).

The window extending one year before the change to the Index show that additions from the S&P 400 under-perform relative to their non-S&P 400 counterparts. This conclusion, though seemingly indicating a substantial difference between the two sub-samples, fails to be supported by neither the t-tests nor the medians test at any significance level. Nevertheless, the results provide weak evidence suggesting that the S&P is adding bad recent performers from the S&P 400 MidCap Index into its larger and more well-known S&P 500 Index perhaps in the hope of boosting their performance. This study also finds weak evidence that added companies from the S&P 400 Index underperform in the one year period after they are added to the S&P 500 relative to firms that are added from outside the S&P 400 Index.

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Appendix 1a. The Full Anticipation Sample With the Type of Anticipation Date

Company added to the S&P 500	1=From The S&P 400 Index	AT	AD	ED	Company Deleted from the S&P 400	Reason for deletion	Type of anticipation (1=Agree to buy, sell, merge)
ECHO BAY MINES LTD		12/5/89	2/27/90	3/2/90	LIN Broadcasting	Takeover by McCaw Cellular Comm. Inc.	1
NALCO CHEMICAL CO		2/21/90	2/27/90	3/6/90	Great Northern Nekoosa	Takeover by Georgia-Pacific Corp.	1
COOPER TIRE & RUBBER CO		4/26/90	5/17/90	5/24/90	Norton	Takeover by Btr PLC.	1
BIOMET INC		6/6/90	8/6/90	8/22/90	Philips Industries	Acquired by Tomkins PLC.	1
PEP BOYS MANNY MOE & JACK		7/26/90	8/7/90	8/13/90	General Instrument	Takeover by a unit of Forstman Little & Co.	all bidders droped
J W P INC		9/17/90	9/18/90	9/19/90	Prime Motor Inns	Filed Chapter 11	may file Chapter 11
UNITED STATES BANCORP		6/5/90	10/2/90	10/5/90	Corroon & Black	Acquired by Willis Faber PLC	1
SANTA FE PAC CORP		5/18/90	11/30/90	12/4/90	INTERCO	No longer a representative of it's industry	threat Chapter 11
CORESTATES FINANCIAL CORP		12/14/90	12/21/90	12/28/90	MCA Inc	Takeover by Matsushita Elec. Ind. Co., Ltd.	settle shareholders suit
BOATMENS BANCSHARES INC		2/8/90	2/11/91	2/12/91	Carter Hawley Hale	Filed Chapter 11	will file Chapter 11
BRUNOS INC		5/10/91	5/14/91	5/21/91	Square Co.	Takeover by Schneider S.A.	compelled to hold shareholders meeting
UNION ELECTRIC CO		5/7/91	9/16/91	9/19/91	NCR Corp.	Acquired by American Tel. & Tel. Co.	1
NOVELL INC	1	6/17/91	10/29/91	10/31/91	Cross & Trecker	Acquired by Giddings & Lewis	1
GREAT LAKES CHEM CORP	1	10/30/91	11/18/91	11/22/91	Harcourt Brace/Jov.	Takeover by General Cinema Corp.	bond holders approve deal
AMGEN INC		7/22/91	12/19/91	12/31/91	C&S/Sovran Corp.	Takeover by NCNB Corp.	1
NATIONSBANK CORP		7/22/91	12/19/91	12/31/91	NCNB Corp.	Merged with C&S/Sovran Corp.	1
FEDERAL HOME LOAN MORTGAGE COR	1	7/22/91	12/19/91	12/31/91	Manufacturers Hanover	Takeover by Chemical Banking Corp.	1
INTERPUBLIC GROUP COS INC	1	6/10/92	10/22/92	10/29/92	Wetterau Inc.	Takeover by SuperValu Inc.	1
AMERICAN BARRICK RESOURCES COR		5/26/93	11/10/93	11/12/93	AMAX Inc.	Merged with Cyprus Minerals Co.	1
U N U M CORP		9/17/93	3/4/94	3/10/94	Ethyl Corp.	Spin-off of chemial business. Reduced company's size	1
UNITED STATES HEALTHCARE INC	1	4/5/94	4/8/94	4/15/94	Grumman Corp.	Acquired by Northrop Corp.	won bid
UNITED HEALTHCARE CORP		5/24/94	6/23/94	6/30/94	Gerber Products	Acquired by Sandoz Ltd.	1
SOUTHWEST AIRLINES CO	1	3/24/94	7/5/94	7/12/94	UAL Corp.	Shareholders approved recapitalization proposal.	Shareholder approval
SIGMA ALDRICH CORP	1	7/11/94	9/19/94	9/20/94	McCaw Cellular Comm.	Acquired by AT&T Corp.	Justice dept ok
NATIONAL CITY CORP		7/12/94	9/19/94	9/26/94	McKesson Corp.	Selling subsidary PCS Health Svc. Sys	1
ALLTEL CORP		9/13/94	12/13/94	12/20/94	Borden Inc.	Acquired by Kohlberg Kravis Roberts & Co	1
SILICON GRAPHICS INC	1	12/13/94	1/10/95	1/17/95	Transco Enegry	Added from MidCap 400	bought by williams co
G P U INC		1/10/95	2/2/95	2/8/95	Pet Inc.	Acquired by Grand Metropolitan PLC-a British Corp	1
APPLIED MATERIALS INC	1	8/30/94	3/8/95	3/15/95	Lockheed Corp.	Merger between the two Lockheed Corp. & Martin Marietta	1
LAIDLAW INC	1	8/24/94	3/9/95	3/31/95	Rollins Enviornmental	Added to MidCap 400	intends to buy
BANK NEW YORK INC	1	3/1/95	3/23/95	3/30/95	Maxus Energy	Acquired by Yacimientos Petrolifetos Fiscales SA.	1
C U C INTERNATIONAL INC	1	4/3/95	4/21/95	4/28/95	E-Systems, Inc.	Acquired by Raytheon Co.	1
LOEWS CORP		12/7/94	5/2/95	5/9/95	Continental Corp.	Acquired by CNA Financial Corp.	1
CABLETRON SYSTEMS INC	1	4/10/95	5/18/95	5/19/95	Clark Equipment	Acquired by Ingersoll Rand Co.	clark capitulated
TELLABS INC		3/13/95	6/23/95	6/30/95	M/A Com	Acquired by AMP Inc.	1
REPUBLIC NEW YORK CORP		6/12/95	6/26/95	7/3/95	Lotus Development	Acquired by IBM	1
WILLAMETTE INDUSTRIES INC	1	4/21/95	8/11/95	8/17/95	Bruno's Inc.	Acquired by Kohlberg Kravis Roberts & Co	1

Appendix 1a. The Full Anticipation Sample With the Type of Anticipation Date (continued)

Company added to the S&P 500	1=From The S&P 400 Index	AT	AD	ED	Company Deleted from the S&P 400	Reason for deletion	Type of anticipation (1=Agree to buy, sell, merge)
MORGAN STANLEY GROUP INC		2/8/95	9/14/95	9/21/95	Santa Fe Pacific Corp.	Merged with Burlington Northern Inc.	shreholders approve deal
FEDERATED DEPT STORES INC DEL		7/18/95	10/31/95	11/7/95	Zenith Electronics	LG Electronics Inc. increased stake in (ZE) 57.7%	lg intends to buy majority of shares
FIRST CHICAGO N B D CORP		2/22/95	11/21/95	11/30/95	Shawmut National Corp.	Acquired by Fleet Financial Group.	1
HUMANA INC		7/13/95	11/21/95	11/30/95	NBD Bancorp.	Merged to First Chicago NBD Corp.	1
P P & L RESOURCES INC		7/18/95	11/22/95	11/24/95	CBS Inc.	Acquired by Westinghouse Electronics Corp.	1
COMERICA INC	1	7/13/95	11/28/95	11/30/95	First Chicago Corp.	Merged to First Chicago NBD Corp.	1
L S I LOGIC CORP	1	6/23/95	12/12/95	12/13/95	Scott Paper	Acquired by Kimberely-Clark	1
CASE CORP		12/27/95	1/11/96	1/19/96	Pittston Services Group.	Split shares into 2 new classes of stock-Pittston	will split stocks
BAY NETWORKS INC	1	1/31/96	2/8/96	2/9/96	Capital Cities/ABC	Merged into the Walt Disney Co.	1
GREEN TREE FINANCIAL CORP	1	11/7/95	3/5/96	3/12/96	Federal Paper Board	Acquired by International Paper	1
GENERAL INSTRUMENT CORP NEW		3/7/96	3/25/96	3/29/96	First Interstate Bancorp.	Acquired by Wells Fargo & Co.	Fed ok
AON CORP	1	1/8/96	4/17/96	4/22/96	Loral Corp.	Acquired by Lockheed Martin Corp.	1
TUPPERWARE CORP		1/9/96	5/21/96	5/30/96	Premark Int'l.	Spin-off of one of it's units-Tupperware Corp.	1
M G I C INVESTMENT CORP WIS		4/2/96	7/15/96	7/18/96	US Healthcare	Merged with Aetna Life & Casualty Co.	1
H F S INC	1	2/16/96	8/6/96	8/15/96	Dial Corp.	Added to MidCap 400. New Name-Vind Corp	1
DELL COMPUTER CORP	1	6/3/96	8/29/96	9/5/96	Varity Corp.	Merged with Lucas Industries PLC.	1
GUIDANT CORP		6/7/96	11/20/96	12/18/96	Bally Entertainment	Acquired by Hilton Hotels Corp.	1
M B I A INC		8/27/96	11/25/96	12/2/96	Consolidated Freightways Inc.	Spin-off of its long-haul trucking unit	will spinn off
HEALTHSOUTH CORP	1	8/30/96	1/2/97	1/7/97	Boatmen's Bancshares	Acquisition by NationsBank Corp.	1
CONSECO INC		12/12/96	1/13/97	1/14/97	Alexander & Alexander Service	Acquired by AON Corp.	1
PARAMETRIC TECHNOLOGY CORP	1	2/3/97	4/1/97	4/2/97	Pacific Telesis	Acquired by SBC Communications	FCC ok
ADOBE SYSTEMS INC	1	3/11/97	4/30/97	5/5/97	Santa Fe Pacific Gold	Acquired by Newmont Mining Corp.	win bid
STATE STREET BOSTON CORP		3/21/97	5/7/97	8/15/97	NYNEX Corp.	Merged with Bell Atlantic Corp.	1
CARDINAL HEALTH INC	1	3/27/97	5/22/97	5/23/97	Conrail Inc.	Acquired by Norfolk Southern Corp.	1
SCHWAB CHARLES CORP NEW	1	2/6/97	5/27/97	5/30/97	Morgan Stanley	Merged with Dean Witter, Discover & Co.	1
COUNTRYWIDE CREDIT INDS INC		2/14/97	6/11/97	6/17/97	USLIFE Corp.	Acquired by American General Corp.	1
EQUIFAX INC		5/29/97	6/16/97	6/18/97	PanEnergy Corp.	Acquired by Duke Power Co.	Justice dept ok
SUNAMERICA INC	1	6/13/97	7/10/97	7/16/97	Giddings & Lewis	Acquired Thyssen AG	1
OWENS ILL INC		7/24/97	7/25/97	8/1/97	McDonnell Douglas	Merged with Boeing Co.	EU opposition eliminated
PROGRESSIVE CORP OH		3/20/97	7/25/97	8/1/97	U.S. Bancorp	Merged with First Bank System	SEC ok
CLEAR CHANNEL COMMUNICATIONS I		6/24/97	8/21/97	8/29/97	Tandem Computers, Inc.	Acquired by Compaq Computer Corp.	1
K L A TENCOR CORP		7/31/97	9/9/97	9/12/97	Amdalh Corp.	Acquired by Fujitsu Ltd.	1
H B O & CO		7/18/97	10/15/97	10/22/97	Louisiana Land & Exploration	Acquired by Burlington Resources Inc.	1
CINCINNATI FINANCIAL CORP		5/28/97	12/16/97	12/17/97	CUC Intl.	Merged into Cendant Corp.	1
SYNOVUS FINANCIAL CORP		9/25/97	11/24/97	11/26/97	Salomon Inc.	Acquired by Travelers Group	1

Appendix 1b. The Full Additions Sample

Company added to the S&P 500	1=From the S&P 400	AD	ED	Deleted company	Reason for Change
ECHO BAY MINES LTD		2/27/90	3/2/90	LIN Broadcasting	Takeover by McCaw Cellular Comm. Inc.
NALCO CHEMICAL CO		2/27/90	3/6/90	Great Northern Nekoosa	Takeover by Georgia-Pacific Corp.
COOPER TIRE & RUBBER CO		5/17/90	5/24/90	Norton	Takeover by Btr PLC.
BIOMET INC		8/6/90	8/22/90	Philips Industries	Acquired by Tomkins PLC.
PEP BOYS MANNY MOE & JACK		8/7/90	8/13/90	General Instrument	Takeover by a unit of Forstman Little & Co.
J W P INC		9/18/90	9/19/90	Prime Motor Inns	Filed Chapter 11
UNITED STATES BANCORP		10/2/90	10/5/90	Corroon & Black	Acquired by Willis Faber PLC
SANTA FE PAC CORP		11/30/90	12/4/90	INTERCO	No longer a representative of it's industry
ALZA CORP		12/10/90	12/11/90	Lone Star Industries	Filed Chapter 11
CORESTATES FINANCIAL CORP		12/21/90	12/28/90	MCA Inc	Takeover by Matsushita Elec. Ind. Co., Ltd.
BLOCKBUSTER ENTERTAINMENT CORP		1/8/91	1/9/91	Pan Am	Filed Chapter 11
BOATMENS BANCSHARES INC		2/11/91	2/12/91	Carter Hawley Hale	Filed Chapter 11
TRANSCO ENERGY CO		4/15/91	4/16/91	U.S. Home	Filed Chapter 11
BRUNOS INC		5/14/91	5/21/91	Square Co.	Takeover by Schneider S.A.
UNION ELECTRIC CO		9/16/91	9/19/91	NCR Corp.	Acquired by American Tel. & Tel. Co.
NOVELL INC	1	10/29/91	10/31/91	Cross & Trecker	Acquired by Giddings & Lewis
GREAT LAKES CHEM CORP	1	11/18/91	11/22/91	Harcourt Brace/Jov.	Takeover by General Cinema Corp.
AMGEN INC		12/19/91	12/31/91	C&S/Sovran Corp.	Takeover by NCNB Corp.
NATIONSBANK CORP		12/19/91	12/31/91	NCNB Corp.	Merged with C&S/Sovran Corp.
FEDERAL HOME LOAN MORTGAGE COR	1	12/19/91	12/31/91	Manufacturers Hanover	Takeover by Chemical Banking Corp.
M B N A CORP		4/20/92	4/22/92	Security Pacific	Acquired by BankAmerica Corp.
GIDDINGS & LEWIS INC WIS		6/24/92	7/2/92	Acme-Cleveland	No longer representative of it's industry
UNITED STATES SURGICAL CORP	1	6/24/92	7/2/92	Monarch Machine Tool	No longer representative of it's industry
SUN MICROSYSTEMS INC	1	8/18/92	8/19/92	Wang Labs (Class B)	Filed Chapter 11
INTERPUBLIC GROUP COS INC	1	10/22/92	10/29/92	Wetterau Inc.	Takeover by SuperValu Inc.
MCCAW CELLULAR COMMS INC		6/23/93	6/30/93	Westmoreland Coal	Removed from S&P MidCap Index
DEAN WITTER DISCOVER & CO		6/25/93	7/12/93	Interlake Corp.	Company no longer a representative of it's industry
COLUMBIA HCA HEALTHCARE CORP		8/30/93	8/31/93	Galen HealthCare	Merged with Columbia Hospital Corp.
WACHOVIA CORP	1	9/23/93	9/30/93	Quantum Chemical	Acquired by Hanson PLC
PIONEER HI BRED INTL INC	1	10/12/93	10/13/93	JWP Inc.	Filed Chapter 11
AMERICAN BARRICK RESOURCES COR		11/10/93	11/12/93	AMAX Inc.	Merged with Cyprus Minerals Co.
BURLINGTON RESOURCES INC	1	11/19/93	11/22/93	Paramount Comm.	NA
CISCO SYSTEMS INC	1	12/22/93	12/30/93	Travelers Crop.	Impending merger with Primerica Corp.
KEYCORP NEW		2/23/94	3/1/94	CNA Financial	Failure to meet S&P criteria for broad ownership & liquidity
U N U M CORP		3/4/94	3/10/94	Ethyl Corp.	Spin-off of chemial business. Reduced company's size.
AIRTOUCH COMMUNICATIONS		3/28/94	4/5/94	Fedders Corp.	Low market value
UNITED STATES HEALTHCARE INC		4/8/94	4/15/94	Grumman Corp.	Acquired by Northrop Corp.
MICROSOFT CORP		5/12/94	6/6/94	Syntex Corp.	Agreement to be acquired by Roche Holdings AG
UNITED HEALTHCARE CORP	1	6/23/94	6/30/94	Gerber Products	Acquired by Sandoz Ltd.
SOUTHWEST AIRLINES CO	1	7/5/94	7/12/94	UAL Corp.	Shareholders approved recapitalization proposal.
FIRST DATA CORP		9/19/94	9/26/94	National Intergroup	Low market value
NATIONAL CITY CORP		9/19/94	9/26/94	McKesson Corp.	Selling subsidary PCS Health Svc. Sys. to Eli Lilly & Co.
SIGMA ALDRICH CORP	1	9/19/94	9/20/94	McCaw Cellular Comm.	Acquired by AT&T Corp.
SANTA FE PACIFIC GOLD CORP		9/23/94	9/30/94	Genesco Inc.	Low market value
CINERGY CORP		10/19/94	10/24/94	PSI Resources	Merged with Cincinnati Gas & Electric Co.
ALLTEL CORP		12/13/94	12/20/94	Borden Inc.	Acquired by Kohlberg Kravis Roberts & Co.
SILICON GRAPHICS INC	1	1/10/95	1/17/95	Transco Enegry	Added from MidCap 400
G P U INC		2/2/95	2/8/95	Pet Inc.	Acquired by Grand Metropolitan PLC-a British Corp.
APPLIED MATERIALS INC	1	3/8/95	3/15/95	Lockheed Corp.	Merger between the two Lockheed Corp. & Martin Marietta
LAIDLAW INC	1	3/9/95	3/31/95	Rollins Enviornmental	Added to MidCap 400
BANK NEW YORK INC	1	3/23/95	3/30/95	Maxus Energy	Acquired by Yacimientos Petroliferos Fiscales SA.
C U C INTERNATIONAL INC	1	4/21/95	4/28/95	E-Systems, Inc.	Acquired by Raytheon Co.
LOEWS CORP		5/2/95	5/9/95	Continental Corp.	Acquired by CNA Financial Corp.
CABLETRON SYSTEMS INC	1	5/18/95	5/19/95	Clark Equipment	Acquired by Ingersoll Rand Co.
DARDEN RESTAURANTS INC		5/19/95	5/26/95	Oshkosh B'Gosh	Transferred to SmallCap 600
ALLSTATE CORP		6/21/95	7/12/95	SPX Corp.	Added to SmallCap 600
TELLABS INC		6/23/95	6/30/95	M/A Com	Acquired by AMP Inc.
REPUBLIC NEW YORK CORP		6/26/95	7/3/95	Lotus Development	Acquired by IBM
WILLAMETTE INDUSTRIES INC	1	8/11/95	8/17/95	Bruno's Inc.	Acquired by Kohlberg Kravis Roberts & Co.
MORGAN STANLEY GROUP INC		9/14/95	9/21/95	Santa Fe Pacific Corp.	Merged with Burlington Northern Inc.
FEDERATED DEPT STORES INC DEL		10/31/95	11/7/95	Zenith Electronics	LG Electronics Inc.- increased stake in ZE 57.7%
FIRST CHICAGO N B D CORP		11/21/95	11/30/95	Shawmut National Corp.	Acquired by Fleet Financial Group.
HUMANA INC		11/21/95	11/30/95	NBD Bancorp.	Merged to First Chicago NBD Corp.
P P & L RESOURCES INC		11/22/95	11/24/95	CBS Inc.	Acquired by Westinghouse Electronics Corp.
COMERICA INC	1	11/28/95	11/30/95	First Chicago Corp.	Merged to First Chicago NBD Corp.
L S I LOGIC CORP	1	12/12/95	12/13/95	Scott Paper	Acquired by Kimberely-Clark
I T T INDUSTRIES INC IND		12/15/95	12/19/95	Zum Industries	Low market value
CASE CORP		1/11/96	1/19/96	Pittston Services Group.	Split shares into 2 new classes of stock-Pittston
BAY NETWORKS INC	1	2/8/96	2/9/96	Capital Cities/ABC	Merged into the Walt Disney Co.
GREEN TREE FINANCIAL CORP	1	3/5/96	3/12/96	Federal Paper Board	Acquired by International Paper
CHASE MANHATTAN CORP NEW		3/25/96	3/29/96	Chemical Banking Corp.	Merged with Chase Manhattan
GENERAL INSTRUMENT CORP NEW		3/25/96	3/29/96	First Interstate Bancorp.	Acquired by Wells Fargo & Co.
WORLDCOM INC GA	1	3/25/96	3/29/96	Chase Manhattan (old)	Acquired by Chemical Banking Corp.
E M C CORP MA	1	3/26/96	3/27/96	Cray Research	Acquired by Silicon Graphics
AON CORP	1	4/17/96	4/22/96	Loral Corp.	Acquired by Lockheed Martin Corp.
M G I C INVESTMENT CORP WIS		7/15/96	7/18/96	US Healthcare	Merged with Aetna Life & Casualty Co.
BATTLE MOUNTAIN GOLD CO	1	7/16/96	7/19/96	Brown Group.	Transferred to the S&P SmallCap 600

Appendix 1b. The Full Additions Sample (continued)

Company added to the S&P 500	1=From the S&P 400	AD	ED	Deleted company	Reason for Change
H F S INC	1	8/6/96	8/15/96	Dial Corp.	Added to MidCap 400. New Name-Viad Corp.
SEAGATE TECHNOLOGY	1	8/6/96	8/15/96	Ogden Corp.	Transferred to MidCap 400
DELL COMPUTER CORP	1	8/29/96	9/5/96	Varity Corp.	Merged with Lucas Industries PLC.
LUCENT TECHNOLOGIES INC		9/17/96	9/30/96	Outboard Marine	Added to SmallCap 600
UNION PACIFIC RES GROUP INC		10/7/96	10/15/96	Community Psychiatric Ctrs	Low market value
GUIDANT CORP		11/20/96	12/18/96	Bally Entertainment	Acquired by Hilton Hotels Corp.
M B I A INC		11/25/96	12/2/96	Consolidated Freightways Inc.	Spin-off of its long-haul trucking unit
AUTOZONE INC		12/19/96	12/31/96	Luby's Cafeterias	Transferred to SmallCap 600
THERMO ELECTRON CORP	1	12/19/96	12/31/96	Shoney's Inc.	Transferred to SmallCap 600
HEALTHSOUTH CORP	1	1/2/97	1/7/97	Boatmen's Bancshares	Acquisition by NationsBank Corp.
CONSECO INC		1/13/97	1/14/97	Alexander & Alexander Service	Acquired by AON Corp.
PARAMETRIC TECHNOLOGY CORP	1	4/1/97	4/2/97	Pacific Telesis	Acquired by SBC Communications
ADOBE SYSTEMS INC	1	4/30/97	5/5/97	Santa Fe Pacific Gold	Acquired by Newmont Mining Corp.
STATE STREET BOSTON CORP		5/7/97	8/15/97	NYNEX Corp.	Merged with Bell Atlantic Corp.
CARDINAL HEALTH INC	1	5/22/97	5/23/97	Conrail Inc.	Acquired by Norfolk Southern Corp.
CARDINAL HEALTH INC	1	5/22/97	5/23/97	Conrail Inc.	Acquired by Norfolk Southern Corp.
SCHWAB CHARLES CORP NEW	1	5/27/97	5/30/97	Morgan Stanley	Merged with Dean Witter, Discover & Co.
COUNTRYWIDE CREDIT INDS INC		6/11/97	6/17/97	USLIFE Corp.	Acquired by American General Corp.
WASHINGTON MUTUAL INC		6/30/97	7/1/97	Great Western Finl.	Acquired by Washington Mutual Inc.
SUNAMERICA INC	1	7/10/97	7/16/97	Giddings & Lewis	Acquired Thyssen AG
ANADARKO PETROLEUM CORP		7/22/97	7/25/97	Santa Fe Energy Resources	Added to SmallCap 600
APACHE CORP		7/22/97	7/25/97	Intergraph Corp.	Dropped market value
OWENS ILL INC		7/25/97	8/1/97	McDonnell Douglas	Merged with Boeing Co.
PROGRESSIVE CORP OH		7/25/97	8/1/97	U.S. Bancorp	Merged with First Bank System
CLEAR CHANNEL COMMUNICATIONS I		8/21/97	8/29/97	Tandem Computers, Inc.	Acquired by Compaq Computer Corp.
K L A TENCOR CORP		9/9/97	9/12/97	Amdahl Corp.	Acquired by Fujitsu Ltd.
H B O & CO		10/15/97	10/22/97	Louisiana Land & Exploration	Acquired by Burlington Resources Inc.
SYNOVUS FINANCIAL CORP		11/24/97	11/26/97	Salomon Inc.	Acquired by Travelers Group
CINCINNATI FINANCIAL CORP		12/16/97	12/17/97	CUC Intl.	Merged into Cendant Corp.
OMNICOM GROUP INC		12/16/97	12/23/97	Fleming Companies	Added SmallCap 600

Appendix 2. All Additions on the Announcement Date (AD).

Panel a.

Scholes-Williams Betas, Standardized Residual Method, VW Index

Day	Average Abnormal Return	Median Abnormal Return	Z	N	Positive: Negative	Generalized Sign Z
-14	0.18%	0.00%	1.14	106	53:53	0.41
-13	0.23%	0.26%	1.17	106	58:48	1.38
-12	0.17%	0.03%	0.95	106	53:53	0.41
-11	0.04%	-0.04%	-0.26	106	51:55	0.02
-10	-0.22%	-0.21%	-1.06	106	48:58	-0.56
-9	0.06%	-0.02%	0.41	106	51:55	0.02
-8	-0.13%	-0.16%	-0.69	106	49:57	-0.37
-7	-0.22%	-0.45%	-1.58	106	43:63	-1.53
-6	-0.19%	-0.21%	-0.45	106	50:56	-0.17
-5	-0.30%	-0.26%	-1.39	106	45:61	-1.15
-4	-0.17%	-0.36%	-1.53	106	47:59	-0.76
-3	0.00%	-0.15%	0.01	106	50:56	-0.17
-2	0.12%	0.10%	0.61	106	56:50	0.99
-1	-0.24%	-0.38%	-0.81	106	43:63	-1.53
0	-0.11%	-0.11%	-0.36	106	48:58	-0.56
+1	4.54%	4.13%	26.18***	106	97:9	8.96>>>
+2	0.21%	0.22%	1.23	106	60:46	1.77)
+3	0.37%	0.31%	2.47*	106	63:43	2.35>
+4	-0.02%	-0.02%	0.87	106	52:54	0.22
+5	0.72%	0.43%	4.25***	106	68:38	3.33>>>
+6	-0.45%	-0.34%	-2.55*	106	40:66	-2.12<
+7	0.27%	-0.18%	1.12	105	47:58	-0.67
+8	-0.50%	-0.31%	-2.66**	105	44:61	-1.25
+9	0.04%	-0.11%	0.22	105	51:54	0.11
+10	-0.10%	-0.14%	-0.67	105	46:59	-0.86
+11	-0.09%	0.21%	-0.27	103	59:44	1.88)
+12	-0.12%	0.06%	-0.47	103	54:49	0.90
+13	-0.43%	-0.33%	-2.07*	103	43:60	-1.27
+14	-0.10%	-0.21%	-0.58	103	44:59	-1.08
+15	-0.13%	-0.13%	-0.80	103	49:54	-0.09

Panel b.

Days	Cumulative Average Abnormal Return Equally Weighted	Median Cumulative Abnormal Return	Z	Positive: Negative	Generalized Sign Z
(-5,+5)	5.13%	5.19%	9.51***	84:22	6.44>>>
(-2,+2)	4.52%	4.04%	12.01***	94:12	8.38>>>
(-1,+1)	4.19%	3.82%	14.44***	94:12	8.38>>>
(-1,0)	-0.34%	-0.37%	-0.83	47:59	-0.76
(0,0)	-0.10%	-0.10%	-0.36	48:58	-0.56
(0,+1)	4.42%	4.04%	18.26***	98:8	9.16>>>
(-2,0)	-0.22%	-0.29%	-0.32	50:56	-0.17
(0,+2)	4.64%	4.40%	15.62***	97:9	8.96>>>

S, (,) significant at .10 *, <, > significant at .05
, <<, >> significant at .01 *, <<<, >>> significant at .001

Appendix 3. All Anticipated Additions on the Announcement Date (AD).

Panel a.

Scholes-Williams Betas, Standardized Residual Method, VW Index

Day	Average Abnormal Return	Median Abnormal Return	Z	N	Positive: Negative	Generalized Sign Z
-14	0.13%	0.01%	1.19	71	37:34	0.74
-13	0.29%	0.27%	0.94	71	39:32	1.21
-12	-0.01%	-0.09%	0.00	71	32:39	-0.45
-11	0.05%	0.02%	-0.41	71	36:35	0.50
-10	-0.22%	-0.05%	-0.66	71	35:36	0.26
-9	0.20%	0.09%	1.04	71	38:33	0.97
-8	-0.08%	-0.05%	-0.30	71	34:37	0.02
-7	-0.37%	-0.41%	-1.89$	71	29:42	-1.16
-6	-0.10%	-0.22%	-0.09	71	31:40	-0.69
-5	-0.38%	-0.35%	-1.32	71	28:43	-1.40
-4	-0.08%	-0.29%	-0.67	71	33:38	-0.21
-3	-0.04%	-0.14%	-0.18	71	33:38	-0.21
-2	0.17%	0.12%	0.39	71	36:35	0.50
-1	-0.25%	-0.39%	-0.72	71	30:41	-0.93
0	0.02%	-0.02%	-0.03	71	35:36	0.26
+1	4.71%	4.14%	23.28***	71	67:4	7.86>>>
+2	0.35%	0.25%	1.59	71	43:28	2.16>
+3	0.49%	0.48%	2.79**	71	43:28	2.16>
+4	0.15%	0.09%	1.77$	71	40:31	1.45
+5	0.61%	0.49%	3.18**	71	45:26	2.64>>
+6	-0.68%	-0.56%	-3.39***	71	18:53	-3.78<<<
+7	0.12%	-0.29%	0.31	71	31:40	-0.69
+8	-0.61%	-0.34%	-2.76**	71	28:43	-1.40
+9	-0.06%	-0.16%	-0.16	71	33:38	-0.21
+10	0.06%	-0.03%	0.05	71	34:37	0.02
+11	-0.02%	0.21%	0.28	70	40:30	1.57
+12	0.06%	-0.08%	0.10	70	33:37	-0.10
+13	-0.61%	-0.54%	-2.36*	70	27:43	-1.54
+14	-0.35%	-0.25%	-1.57	70	26:44	-1.78(
+15	0.01%	0.07%	0.15	70	37:33	0.86

Panel b.

Days	Cumulative Average Abnormal Return Equally Weighted	Median Cumulative Abnormal Return	Z	Positive: Negative	Generalized Sign Z
(-5,+5)	5.74%	5.90%	9.07***	56:15	5.25>>>
(-2,+2)	5.00%	4.73%	10.96***	64:7	7.15>>>
(-1,+1)	4.48%	4.11%	13.01***	63:8	6.91>>>
(-1,0)	-0.23%	-0.05%	-0.53	35:36	0.26
(0,0)	0.02%	-0.02%	-0.03	35:36	0.26
(0,+1)	4.73%	4.07%	16.44***	66:5	7.63>>>
(-2,0)	-0.06%	0.16%	-0.21	37:34	0.74
(0,+2)	5.08%	4.49%	14.34***	65:6	7.39>>>

$, (,) significant at .10 *, <, > significant at .05

, <<, >> significant at .01 *, <<<, >>> significant at .001

Appendix 4. All Non-Anticipated Additions on the Announcement date (AD).

Panel a.

Scholes-Williams Betas, Standardized Residual Method, VW Index

Day	Average Abnormal Return	Median Abnormal Return	Z	N	Positive: Negative	Generalized Sign Z
-14	0.36%	-0.08%	0.44	35	17:18	0.02
-13	0.19%	0.36%	0.96	35	21:14	1.37
-12	0.58%	0.37%	1.82$	35	21:14	1.37
-11	0.32%	0.16%	1.03	35	18:17	0.36
-10	-0.34%	-0.40%	-1.22	35	13:22	-1.33
-9	-0.37%	-0.18%	-1.26	35	13:22	-1.33
-8	-0.25%	-0.29%	-0.85	35	15:20	-0.66
-7	0.03%	-0.43%	-0.21	35	15:20	-0.66
-6	-0.14%	0.22%	0.03	35	19:16	0.70
-5	-0.24%	-0.18%	-0.71	35	16:19	-0.32
-4	-0.49%	-0.46%	-2.17*	35	12:23	-1.67(
-3	-0.07%	-0.25%	-0.05	35	15:20	-0.66
-2	0.17%	0.27%	1.03	35	21:14	1.37
-1	-0.15%	-0.29%	-0.19	35	14:21	-1.00
0	-0.34%	-0.41%	-0.50	35	14:21	-1.00
+1	3.87%	3.75%	11.58***	35	28:7	3.74>>>
+2	0.02%	-0.05%	0.16	35	17:18	0.02
+3	0.08%	0.11%	0.08	35	19:16	0.70
+4	-0.24%	-0.38%	-0.75	35	13:22	-1.33
+5	1.04%	0.33%	3.15**	35	23:12	2.05>
+6	-0.02%	0.29%	0.22	35	22:13	1.71)
+7	0.74%	-0.01%	2.22*	35	17:18	0.02
+8	-0.02%	0.08%	0.05	35	18:17	0.36
+9	0.08%	-0.18%	0.25	35	17:18	0.02
+10	-0.37%	-0.24%	-0.99	35	13:22	-1.33
+11	-0.16%	0.32%	-0.88	34	20:14	1.22
+12	-0.16%	0.46%	-0.04	34	23:11	2.24>
+13	-0.12%	-0.25%	-0.48	34	16:18	-0.16
+14	0.59%	0.21%	1.69$	34	19:15	0.87
+15	-0.33%	-0.59%	-1.42	34	12:22	-1.53

Panel b.

Days	Cumulative Average Abnormal Return Equally Weighted	Median Cumulative Abnormal Return	Z	Positive: Negative	Generalized Sign Z
(-5,+5)	3.67%	4.03%	3.51***	27:8	3.40>>>
(-2,+2)	3.58%	3.43%	5.41***	30:5	4.42>>>
(-1,+1)	3.38%	3.10%	6.29***	31:4	4.75>>>
(-1,0)	-0.48%	-0.70%	-0.49	13:22	-1.33
(0,0)	-0.34%	-0.41%	-0.50	14:21	-1.00
(0,+1)	3.53%	3.27%	7.84***	31:4	4.75>>>
(-2,0)	-0.31%	-0.38%	0.20	15:20	-0.66
(0,+2)	3.55%	3.53%	6.49***	30:5	4.42>>>

S, (,) significant at .10 *, <, > significant at .05

, <<, >> significant at .01 *, <<<, >>> significant at .001

Appendix 5. All Anticipated Additions on the Anticipation date (AT).

Panel a.

Scholes-Williams Betas, Standardized Residual Method, VW Index

Day	Average Abnormal Return	Median Abnormal Return	Z	N	Positive: Negative	Generalized Sign Z
-14	0.03%	-0.24%	-0.02	71	32:39	-0.49
-13	-0.47%	-0.63%	-2.47*	71	29:42	-1.20
-12	0.24%	0.05%	1.15	71	37:34	0.70
-11	-0.17%	-0.13%	-0.10	71	31:40	-0.73
-10	0.31%	0.23%	1.34	71	38:33	0.93
-9	-0.17%	-0.33%	-0.71	71	30:41	-0.97
-8	0.34%	0.47%	1.83S	71	45:26	2.60>>
-7	0.07%	0.07%	0.51	71	38:33	0.93
-6	0.20%	0.01%	0.81	71	36:35	0.46
-5	-0.30%	-0.35%	-1.67S	71	31:40	-0.73
-4	-0.17%	-0.52%	-0.47	71	30:41	-0.97
-3	-0.36%	-0.31%	-1.74S	71	26:45	-1.92(
-2	-0.10%	-0.08%	-0.46	71	35:36	0.22
-1	-0.23%	0.03%	-0.98	71	37:34	0.70
0	0.11%	-0.03%	0.51	71	32:39	-0.49
+1	0.03%	-0.05%	-0.51	71	35:36	0.22
+2	0.05%	-0.17%	-0.01	71	31:40	-0.73
+3	-0.21%	0.04%	-0.91	71	38:33	0.93
+4	-0.04%	-0.08%	-0.38	71	33:38	-0.25
+5	0.17%	0.12%	1.02	71	39:32	1.17
+6	-0.11%	-0.18%	-0.18	71	30:41	-0.97
+7	0.20%	0.14%	0.87	71	39:32	1.17
+8	-0.01%	0.09%	-0.38	71	36:35	0.46
+9	0.00%	-0.13%	-0.35	71	30:41	-0.97
+10	-0.21%	-0.38%	-1.20	71	29:42	-1.20
+11	0.18%	-0.05%	1.17	71	35:36	0.22
+12	0.02%	-0.21%	-0.45	71	33:38	-0.25
+13	-0.17%	-0.29%	-0.79	71	30:41	-0.97
+14	-0.04%	0.02%	0.36	71	36:35	0.46
+15	-0.27%	-0.14%	-0.70	71	31:40	-0.73

Panel b.

Days	Cumulative Average Abnormal Return Equally Weighted	Median Cumulative Abnormal Return	Z	Positive: Negative	Generalized Sign Z
(-5,+5)	-1.07%	-1.29%	-1.69S	29:42	-1.20
(-2,+2)	-0.15%	-0.64%	-0.65	31:40	-0.73
(-1,+1)	-0.09%	-0.16%	-0.56	34:37	-0.02
(-1,0)	-0.12%	0.02%	-0.33	36:35	0.46
(0,0)	0.10%	-0.03%	0.51	32:39	-0.49
(0,+1)	0.13%	-0.32%	0.00	32:39	-0.49
(-2,0)	-0.22%	-0.18%	-0.54	32:39	-0.49
(0,+2)	0.17%	-0.39%	-0.00	33:38	-0.25

S, (,) significant at .10 *, <, > significant at .05
, <<, >> significant at .01 *, <<<, >>> significant at .001

Appendix 6. All Anticipated Additions From the S&P 400 on the Anticipation Date (AT).

Panel a.

Scholes-Williams Betas, Standardized Residual Method, VW Index

Day	Average Abnormal Return	Median Abnormal Return	Z	N	Positive: Negative	Generalized Sign Z
-14	-0.02%	-0.34%	-0.02	28	12:16	-0.48
-13	-0.65%	-0.65%	-2.08*	28	12:16	-0.48
-12	0.14%	-0.03%	0.88	28	13:15	-0.10
-11	-0.12%	-0.12%	-0.07	28	12:16	-0.48
-10	0.59%	0.37%	1.30	28	16:12	1.04
-9	-0.80%	-1.00%	-2.40*	28	5:23	-3.13<<
-8	0.19%	0.16%	0.71	28	15:13	0.66
-7	0.28%	0.06%	1.04	28	16:12	1.04
-6	0.38%	-0.05%	0.61	28	13:15	-0.10
-5	-0.57%	-0.45%	-1.71$	28	8:20	-1.99<
-4	-0.45%	-0.67%	-1.08	28	11:17	-0.85
-3	-0.43%	-0.34%	-1.36	28	8:20	-1.99<
-2	-0.01%	-0.20%	-0.15	28	11:17	-0.85
-1	-0.04%	0.29%	0.29	28	17:11	1.42
0	0.20%	-0.14%	1.04	28	12:16	-0.48
+1	-0.56%	-0.54%	-1.71$	28	11:17	-0.85
+2	-0.37%	-0.14%	-1.45	28	12:16	-0.48
+3	0.09%	0.06%	0.35	28	15:13	0.66
+4	-0.07%	0.05%	0.14	28	15:13	0.66
+5	0.35%	0.08%	0.95	28	16:12	1.04
+6	-0.33%	-0.47%	-1.42	28	8:20	-1.99<
+7	0.92%	0.50%	2.10*	28	19:9	2.17>
+8	-0.52%	-0.08%	-1.50	28	13:15	-0.10
+9	0.12%	-0.10%	0.00	28	12:16	-0.48
+10	-0.03%	-0.47%	-0.46	28	12:16	-0.48
+11	-0.05%	-0.23%	0.10	28	10:18	-1.23
+12	0.43%	-0.11%	0.74	28	13:15	-0.10
+13	-0.47%	-0.60%	-1.17	28	10:18	-1.23
+14	-0.26%	-0.49%	-0.08	28	11:17	-0.85
+15	0.08%	-0.11%	-0.05	28	13:15	-0.10

Panel b.

Days	Cumulative Average Abnormal Return Equally Weighted	Median Cumulative Abnormal Return	Z	Positive: Negative	Generalized Sign Z
(-5,+5)	-1.85%	-3.37%	-1.42	10:18	-1.23
(-2,+2)	-0.78%	-0.53%	-0.89	12:16	-0.48
(-1,+1)	-0.40%	-0.25%	-0.22	13:15	-0.10
(-1,0)	0.15%	0.29%	0.94	16:12	1.04
(0,0)	0.19%	-0.13%	1.04	12:16	-0.48
(0,+1)	-0.36%	-0.48%	-0.47	10:18	-1.23
(-2,0)	0.14%	0.17%	0.68	14:14	0.28
(0,+2)	-0.72%	-1.38%	-1.23	9:19	-1.61

$, (,) significant at .10 *, <, > significant at .05
, <<, >> significant at .01 *, <<<, >>> significant at .001

Appendix 7. All Anticipated Additions Not From the S&P 400 on the Anticipation Date (AT).

Panel a.
Scholes-Williams Betas, Standardized Residual Method, VW Index

Day	Average Abnormal Return	Median Abnormal Return	Z	N	Positive: Negative	Generalized Sign Z
-14	0.06%	-0.22%	0.01	43	20:23	-0.25
-13	-0.36%	-0.50%	-1.48	43	17:26	-1.16
-12	0.30%	0.07%	0.74	43	23:20	0.67
-11	-0.17%	-0.07%	0.01	43	20:23	-0.25
-10	0.05%	-0.19%	0.42	43	21:22	0.06
-9	0.25%	0.21%	1.05	43	25:18	1.28
-8	0.53%	0.69%	2.08*	43	31:12	3.11>>
-7	-0.08%	0.18%	-0.25	43	22:21	0.36
-6	0.16%	0.44%	0.76	43	24:19	0.97
-5	-0.20%	0.01%	-0.99	43	22:21	0.36
-4	-0.10%	-0.53%	-0.08	43	18:25	-0.86
-3	-0.29%	-0.29%	-1.04	43	18:25	-0.86
-2	-0.21%	0.10%	-0.61	43	23:20	0.67
-1	-0.40%	-0.25%	-1.61	43	19:24	-0.55
0	0.04%	-0.02%	-0.17	43	20:23	-0.25
+1	0.41%	0.44%	0.72	43	24:19	0.97
+2	0.30%	-0.23%	1.11	43	19:24	-0.55
+3	-0.39%	0.04%	-1.41	43	23:20	0.67
+4	-0.11%	-0.41%	-0.87	43	17:26	-1.16
+5	0.01%	0.04%	0.40	43	22:21	0.36
+6	0.10%	0.02%	1.12	43	23:20	0.67
+7	-0.32%	-0.34%	-0.74	43	19:24	-0.55
+8	0.34%	0.23%	0.75	43	23:20	0.67
+9	-0.08%	-0.36%	-0.41	43	18:25	-0.86
+10	-0.35%	-0.33%	-1.23	43	16:27	-1.47
+11	0.40%	0.33%	1.64	43	25:18	1.28
+12	-0.39%	-0.25%	-1.64	43	20:23	-0.25
+13	0.10%	-0.04%	0.19	43	21:22	0.06
+14	0.13%	0.57%	0.63	43	26:17	1.58
+15	-0.46%	-0.09%	-0.75	43	19:24	-0.55

Panel b

Days	Cumulative Average Abnormal Return Equally Weighted	Median Cumulative Abnormal Return	Z	Positive: Negative	Generalized Sign Z
(-5,+5)	-0.94%	-1.00%	-1.37	18:25	-0.86
(-2,+2)	0.13%	-0.66%	-0.25	18:25	-0.86
(-1,+1)	0.05%	-0.11%	-0.61	21:22	0.06
(-1,0)	-0.36%	-0.36%	-1.26	20:23	-0.25
(0,0)	0.03%	-0.02%	-0.17	20:23	-0.25
(0,+1)	0.45%	0.07%	0.39	22:21	0.36
(-2,0)	-0.57%	-0.48%	-1.38	18:25	-0.86
(0,+2)	0.74%	0.58%	0.96	24:19	0.97

S, (,) significant at .10 *, <, > significant at .05
, <<, >> significant at .01 *, <<<, >>> significant at .001