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Analysis of the Effects of Pre-Announcement of S&P 500 Index Changes.

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ANALYSIS OF THE EFFECTS OF PRE ANNOUNCEMENT OF S&P 500 INDEX CHANGES

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ABSTRACT

In this study we attempt to answer the question – does the start of pre-announcing of S&P 500 index changes in October 1989 have an effect on the trading pattern of added or deleted firms? We document that prior to October 1989 the excess returns of added or deleted firms follow a white noise process around the event, whereas after the start of pre-announcing the excess returns can be described as non-stationary. This indicates significant excess profits to be captured around the addition or deletion event after S&P started pre-announcing changes in October 1989 but not prior to that date.

JEL: G12; G14

KEYWORDS: S&P 500 Discretionary Deletions, S&P 500 Changes, Excess Returns

INTRODUCTION

The S&P 500 index consists of 500 large cap stocks and is the most prominent index in capital markets. In a press release to Reuters on October 1, 2012 the S&P Dow Jones Indices LLC, a subsidiary of The McGraw-Hill Companies, Inc., states: "The S&P 500 is widely considered the premier gauge of the overall health of the U.S. equity market and the leading gauge of large-cap equity performance in the U.S. Over $5.5 trillion is benchmarked to the S&P 500 with index assets comprising approximately $1.3 trillion of this total. The Index includes 500 leading companies and captures approximately 80% coverage of available market capitalization." Considering the vast sums of money linked to the S&P 500 a simple change in the constituents of the index is usually associated with large swings in the added or deleted firm's stock price due to the trading of managers of index funds linked to this index. The S&P US Indexes Committee clearly states in their index methodology, available at http://www.standardandpoors.com, that the addition or deletion of a firm from the index does not indicate a change in fundamentals of the firm and does not imply an investment advice on their part.

In October 1989 the S&P US Indexes Committee started pre-announcing changes to be made to the S&P 500 index. The reason S&P started pre-announcing the index changes is to alleviate the order imbalances created by index funds' demand for shares to rebalance their portfolios. Prior to October 1989 the S&P US Indexes Committee made the changes without pre-announcing. In this study we attempt to answer the question – does the start of pre-announcing of S&P 500 index changes in October 1989 have an effect on the trading pattern of added or deleted firms? We use excess return methodology to test whether predictable patterns in stock returns can be discerned around the event of addition or deletion.

To the best of our knowledge this is the first study to address this question on an excess return basis. We document that prior to October 1989 the excess returns of added or deleted firms follow a white noise process around the event, whereas after the start of pre-announcing the excess returns can be described with a non-stationary process. This indicates significant excess profits to be captured around the event after October 1989 but not prior to that date. This study extends our knowledge in the field of indexing but also raises questions that hopefully will lead to changes that would help the market become more efficient. The remainder of the paper is organized as follows: section 2 examines the relevant literature. Section 3 describes the data and empirical methodology to be used in the study. Section 4 presents the paper results and Section 5 offers concluding remarks.

LITERATURE REVIEW

Additions and deletions to the S&P 500 index are managed by the S&P US indexes committee. In contrast to the rest of the capital market indexes the S&P 500 is not reconstituted annually or semiannually and is not purely based on market capitalization. To be considered for inclusion in the S&P 500 a firm needs to meet certain criteria. The criteria includes requirements for share price, level of liquidity, level of market capitalization, earnings and several others for a company to be selected for inclusion and to remain in the index. Denis, McConnell, Ovtchinnikov and Yu (2003) provide tests on the information hypothesis of additions to an index. This hypothesis suggests that the addition to an index is not an information free event for the firm to be added to the index and as such results in a permanent increase in this company's stock price. The most likely cause is the increased monitoring by financial markets of the added firm which results in better performance of the added firm. Based on this idea the information hypothesis must hold symmetrically not only for added firms but also for deleted firms. If a company is deleted from an index its monitoring by capital markets diminishes and thus the firm should have a smaller motivation to keep up the good performance.

However, Denis et al. (2003) examine only added to the S&P 500 firms and provide evidence of improved performance by these firms. Denis et al. document improved performance of added firms but suggest that another plausible explanation for their results might be the fact that the S&P 500 index committee might be selecting firms with superior potential for inclusion in the index. Naturally, this is contrary to the explicitly stated "no selection bias" by the committee. In the committee statement it is clearly spelled out that if a firm is selected for inclusion in the index, the firm does not necessarily have an "investment merit". The documented evidence by Denis et al. supports the information hypothesis of the price reaction to index additions. Similar to Denis et al. (2003), Hrazdil (2009, 2010) examines S&P 500 index additions only. Hrazdil (2009, 2010) examines the different hypotheses on index additions and provides evidence in support of the price pressure hypothesis. Zhang, Lin and Shin (2010) study analyst behavior around S&P 500 index additions and document significant overreaction in analysts' earnings forecasts of added firms. Ivanov (2010) extends the work of Denis, McConnell, Ovtchinnikov and Yu (2003) by examining discretionary deletions. Ivanov (2010) is the only study which examines S&P 500 index deletions. He finds that contrary to the predictions of the information hypothesis the forecasted and actual earnings of firms discretionary deleted from the S&P 500 index on average increase.

With regards to deletions there are discretionary and non-discretionary deletions from the S&P 500 index. Discretionary deletions occur because a firm does not meet one or several of the S&P 500 index criteria. The non-discretionary deletions are due to a major corporate event such as bankruptcy, spin-off, merger, acquisition or other company specific event which might cause a firm to seize to exist. Similar to Chen, Noronha, and Singal (2006a, b) in this study we do not examine firms with anticipated major corporate event which might cause the firm to be non-discretionary deleted. Dash (2002) finds that a large proportion of the discretionary deleted from the S&P 500 firms are shifted into the S&P MidCap 400 or S&P SmallCap 600 indexes. There are also studies examining systematic risk sensitivity changes of added and deleted from the S&P 500 firms. Vijh (1994) finds an increase in beta of firms added to the S&P 500 index in the period 1975-1989. Barberis, Shleifer, and Wurgler (2005) document also significant increases in betas of stocks added to the S&P 500 index in the period 1976-2000, but also document a decrease in betas of stocks deleted from the S&P 500 index. Furthermore, Geppert, Ivanov and Karels (2011) find that the addition to or deletion from the S&P 500 index is not an information free event by utilizing total derivative of beta and Campbell and Vuolteenaho (2004) "good-beta and bad-beta" decompositions.Chen, Noronha, and Singal (2006a, b) document a temporary 3 months long effect on the share price due to a deletion from the index. Dash (2002) also documents temporary effects in the returns of firms discretionary deleted from the S&P 500 index. Dash documents a reversal of the negative returns due to the deletion from the index within six days of the effective deletion date.

DATA AND METHODOLOGY

Daily stock returns are from the Center for Research in Security Prices (CRSP) for the period January 1963 – December 2011. The market proxy is the NYSE / AMEX / Nasdaq / ARCA - CRSP Value Weighted Return also obtained from CRSP. We also use the S&P 500 as a market proxy similar to Chen, Noronha, and Singal (2005); these results are identical to the results of the CRSP Value Weighted Index and in the interest of brevity are not reported. The CRSP daily S&P 500 constituents from 1926 to 2009 are used to identify additions and deletions. As discussed previously we exclude in the analysis non-discretionary deletions and that is why the numbers of additions and deletions do not match.

Following Chen, Noronha, and Singal (2005) we examine only firms which have complete return data 60 days before and 90 days after the event. This ensures that the firm is not deleted during the period of analysis. We compute excess returns on these firms by using the CRSP's NYSE / AMEX / Nasdaq / ARCA - CRSP Value Weighted Index return and the S&P 500 index return as market proxies. We use the Augmented Dickey-Fuller (ADF) test with null hypothesis of unit root to examine the excess returns of added or deleted firms around the event of addition to or deletion from the S&P 500 index. The test is based on the following Vector Error Correction Model (VECM) of the excess return series y_t :

$$\Delta y_t = \beta_0 + \delta t + \beta_1 y_{t-1} + \sum_{i=1}^{m} \gamma_i \Delta y_{t-i} + \varepsilon_t . \qquad (1)$$

The test null hypothesis is presence of unit root in y_t . Based on this equation we can test for three model specifications – zero mean model, single mean model and trend model. In the tests to follow we use three lag lengths in the VECM. If the introduction of pre-announcement did not have an effect on trading patterns we should observe stationary excess return series. Typically excess stock returns follow stationary process. Alternatively, the presence of unit roots would indicate that the introduction of pre-announcement has had profound effects on trading patterns.

RESULTS

We examine additions and discretionary deletions in the period 1980 – 2009 because we use Lexis – Nexis to identify the nature of the deletion, and Lexis – Nexis provides access to news sources after 1980. We identify 160 discretionary deleted firms in this period. However, keep in mind that between January 1984 and the middle of 1989 S&P did not make announcements of the index changes. Starting in October 1989 S&P started pre-announcing index changes. Here are examples of S&P non-discretionary and discretionary index changes:

On June 3, 1999 the Wall Street Journal reported – "Standard & Poor's will add Office Depot Inc to S&P 500 index after close of trading on date to be announced, replacing American Stores Co, which is being acquired by Albertson's Inc, a S&P 500 component."

On August 25, 2009 the Wall Street Journal reported – "Standard & Poor's says CareFusion will replace crane operator Manitowoc in S&P 500-stock index after close of trading on Aug 31; Cardinal health is spinning off CareFusion, while Manitowoc's market capitalization has fallen to $900 million." Results of daily excess stock returns averaged across all added to and deleted from the S&P 500 index firms are presented in Table 1. Table 1 Panel A reports results for additions whereas Panel B reports results for deletions. The table shows that added firms experience a significant drop in returns after the addition and after controlling for the fluctuation of the market.

Table 1: Average Daily Excess Stock Returns of Added to or Deleted from the S&P 500 Constituent Firms Relative to the (NYSE / AMEX / Nasdaq / ARCA) CRSP Value Weighted Return, 365 days Before or After the Event

Panel A. Added Firms					
	60 days before	**30 days before**	**30 days after**	**60 days after**	**90 days after**
mean (daily)	0.0010	0.0014	0.0003	0.0002	0.0001
mean (annual)	0.4204	0.6381	0.1313	0.0613	0.0555
mean (%)	42.04***	63.81***	13.13*	6.13	5.55
t-test (p-value)	<.0001	0.0013	0.0738	0.1975	0.1409
median (daily)	0.0007	0.0011	0.0003	0.0001	0.0001
median (annual)	0.2709	0.4878	0.1040	0.0255	0.0199
median (%)	27.09***	48.78**	10.40	2.55	1.99
sign test (p-value)	0.0004	0.0161	0.2005	0.6989	0.752
number of firms	1245	1245	1280	1280	1280
ADF Zero Mean	0.4773	0.6763	0.0146**	0.0003***	<.0001***
ADF Single Mean	0.5613	0.7985	0.0278**	0.0037***	0.0002***
ADF Trend	0.3748	0.0328	0.1593	0.0165**	0.0008***
Panel B. Discretionary Deleted Firms					
	60 days before	**30 days before**	**30 days after**	**60 days after**	**90 days after**
mean (daily)	-0.0057	-0.0082	0.0075	0.0053	0.0035
mean (annual)	-0.8763	-0.9512	14.1699	5.9154	2.5628
mean (%)	-87.63	-95.12	1416.99	591.54	256.28
p-value	<.0001***	<.0001***	0.0008***	<.0001***	0.0004***
median (daily)	-0.0049	-0.0070	0.0073	0.0062	0.0023
median (annual)	-0.8341	-0.9230	13.1916	8.4417	1.2837
median (%)	-83.41	-92.30	1319.16	844.17	128.37
sign test (p-value)	<.0001***	<.0001***	0.0052***	0.0027***	0.008***
number of firms	77	77	77	77	77
ADF Zero Mean	0.9287	0.9987	0.1663	0.0156**	0.0016***
ADF Single Mean	0.9604	0.9988	0.057*	0.0026***	0.0023***
ADF Trend	0.971	0.9785	0.1196	0.0009***	<.0001***

This table reports results of daily excess stock returns averaged across all added to and deleted from the S&P 500 index firms across different time intervals. Panel A reports results for firms added to the S&P 500 index. Panel B reports results for firms deleted from the S&P 500 index. The Augmented Dickey-Fuller test is based on the following Vector Error Correction Model of the excess return series y_t *:*

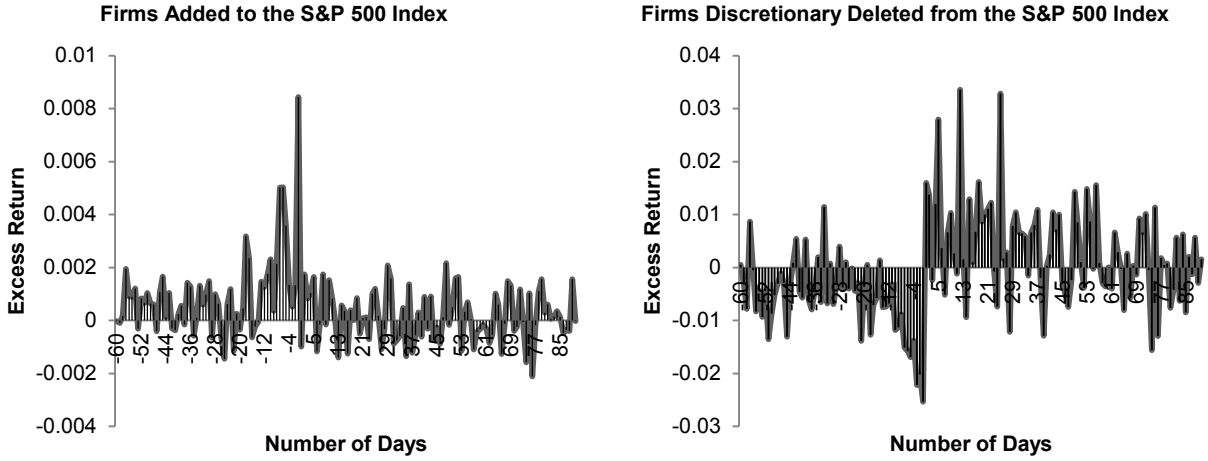
$$\Delta y_t = \beta_0 + \delta t + \beta_1 y_{t-1} + \sum_{i=1}^{m} \gamma_i \Delta y_{t-i} + \varepsilon_t$$

*. ***, **, * indicate statistical significance at the 1%, 5% and 10% level, respectively.*

The average annualized daily returns drop from 42.04% to 6.13%, when periods of 60 days around the event are examined. The results are for firms which have one year of data before and after the event and at least one year in the S&P 500 index. As a robustness test, we relax these restrictions, we allow firms to have only a year before or a year after the event, the results are the same.

The table also shows that out of the original 160 discretionary deleted firms only 71 have complete one year data before and after the deletion. The discretionary deleted firms clearly show major underperformance relative to the market prior to deletion but those that survive after the deletion have a stellar performance relative to the market. The discretionary deleted firms' average annualized daily return 60 days prior the event is -87.63% and improves to 591.54%, 60 days after the event. As additional robustness tests we also compute average daily returns 30 days before and after and 90 days after the event. Results are similar. We examine the entire sample of additions and deletions in the period 1980 – 2009 for presence of unit roots. The unit root tests on the excess returns both 60 days and 30 days prior to the event fail to reject the null of unit root in the added firms' excess return series. The presence of unit roots is rejected for added firms 30, 60 and 90 days after the addition, indicating stationarity. The unit root tests results are similar for deletions. Figure 1 visually presents the temporal behavior of the daily excess stock returns averaged across all added to and deleted from the S&P 500 index firms around the event date. The figures for added firms before the event clearly show the sharp increase a few days before and after the addition. The figures for deleted firms clearly show the sharp drop before the deletion but not a particular pattern after the event.

Figure 1: Average Daily Excess Stock Returns of Added to or Deleted from the S&P 500 Constituent Firms Relative to the (NYSE / AMEX / Nasdaq / ARCA) CRSP Value Weighted Return, 60 Days Before and 90 Days After Event, Whole Sample 1980-2009



This figure presents the temporal behavior of the daily excess stock returns averaged across all added to and deleted from the S&P 500 index firms around the addition or deletion event date (0) for the entire sample period 1980 – 2009.

In October of 1989 the S&P US Indexes committee, which manages the S&P 500 index started pre-announcing index changes a week before the event. Before October 1989 the committee made the changes first and then announced the change if they announced the changes at all. That is why next we examine if the pre-announcing of the changes had an impact on investors trading patterns around the event. Trading prior to the pre-announcement can be described as lacking predictability we attempt to find if this has changed after pre-announcement has been implemented.

Table 2 reports results for added and deleted firms prior to October 1989. Panel A of the table reports additions whereas Panel B reports results for deletions. Added firms perform superior to the market both before and after the addition, 5.4% and 22.40% average annualized daily returns 60 days around the event, respectively. Deleted firms also exhibit superior performance. Discretionary deleted firms out perform the market prior to the deletion but underperform the market after the deletion, -29.83% and -28.01% annualized daily average returns 60 days around the event.

However, these results cannot be easily generalized since there are only six discretionary deleted firms in this sample. The reason there are only six firms is because prior to October 1989 the S&P Index Committee did not necessarily announce the changes. As additional robustness tests we also compute average daily returns 30 days before and after and 90 days after the event. Results are similar. The unit root test results in Table 2 clearly indicate that the excess returns for both added and deleted firms excess stock returns exhibit stationarity. The exception are the 30 day excess returns prior to addition which have unit roots based on the single mean and trend model specifications. This clearly supports the lack of predictability in trading prior to October 1989.Figure 2 visually presents the temporal behavior of added or deleted firms' excess returns. Again, no discernible pattern is observed right before the event, which was the case for the combined sample. This indicates that the pre-announcement of the changes might be the reason for the sharp increase of excess returns for additions and the sharp drop in returns for deletion observed on Figure 1.

Table 2: Average Daily Excess Stock Returns of Added to or Deleted from the S&P 500 Constituent Firms Relative to the (NYSE / AMEX / Nasdaq / ARCA) CRSP Value Weighted Return, 365 days Before or After the Event, Before October 1989

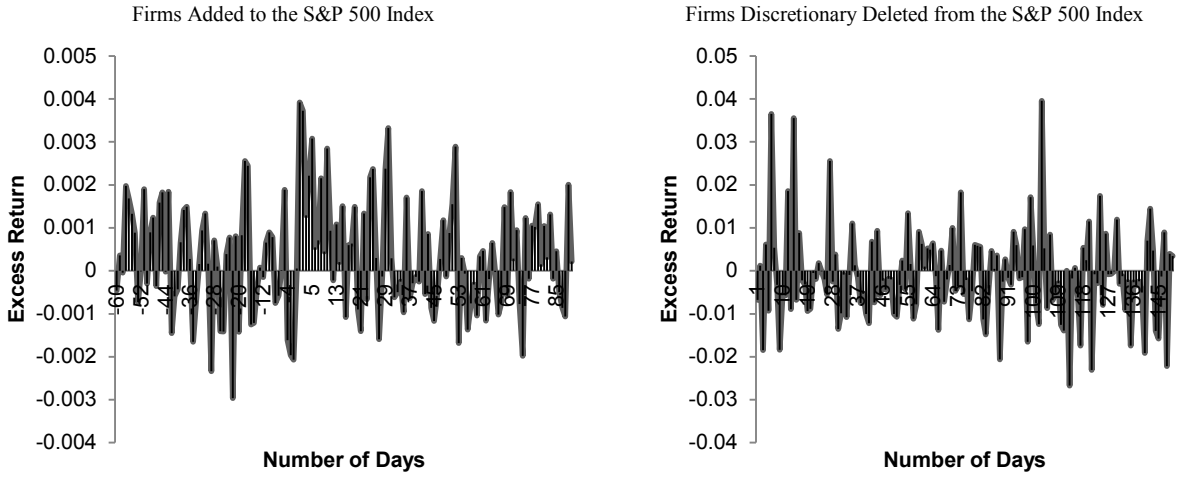
Panel A. Added Firms					
	60 days before	**30 days before**	**30 days after**	**60 days after**	**90 days after**
mean (daily)	0.0001	-0.0002	0.0011	0.0006	0.0004
mean (annual)	0.0540	-0.0738	0.4981	0.2240	0.1759
mean (%)	5.4	-7.38	49.81***	22.40***	17.59***
p-value	0.3771	0.4031	0.0004	0.0033	0.0015
median (daily)	0.0001	0.00004	0.0010	0.0003	0.0003
median (annual)	0.0486	0.0147	0.4445	0.1153	0.1133
median (%)	4.86	1.47	44.45***	11.53	11.33
sign test (p-value)	0.3663	0.8555	0.0052	0.3663	0.2461
number of firms	793	793	793	793	793
ADF Zero Mean	0.0002***	0.021**	0.0642*	0.0013***	<.0001***
ADF Single Mean	0.0026***	0.152	0.0973*	0.0098***	0.0004***
ADF Trend	0.0008***	0.4434	0.4237	0.0067***	0.0014***
Panel B. Discretionary Deleted Firms					
	60 days before	**30 days before**	**30 days after**	**60 days after**	**90 days after**
mean (daily)	-0.0010	-0.0023	-0.0010	-0.0009	-0.0014
mean (annual)	-0.2983	-0.5653	-0.2931	-0.2801	-0.4090
mean (%)	-29.83	-56.53*	-29.31	-28.01	-40.9
p-value	0.486	0.0939	0.5266	0.5027	0.1899
median (daily)	-0.0024	-0.0028	-0.0004	-0.0016	-0.0016
median (annual)	-0.5885	-0.6420	-0.1327	-0.4323	-0.4323
median (%)	-58.85	-64.20	-13.27	-43.23	-43.23
sign test (p-value)	0.0062	0.0428	1	0.6989	0.1133
number of firms	6	6	6	6	6
ADF Zero Mean	<.0001***	0.0091***	0.0005***	0.0019***	0.0001***
ADF Single Mean	0.0001***	0.0267**	0.0024***	0.0192***	0.0008***
ADF Trend	0.0002***	0.0959*	0.0054***	0.0945***	0.0045***

This table reports results for added and deleted firms prior to October 1989. Panel A reports results for additions. Panel B reports results for deletions. The Augmented Dickey-Fuller test is based on the following Vector Error Correction Model of the excess return series y_t *:*

$$\Delta y_t = \beta_0 + \delta t + \beta_1 y_{t-1} + \sum_{i=1}^{m} \gamma_i \Delta y_{t-i} + \varepsilon_t$$

*. ***, **, * indicate statistical significance at the 1%, 5% and 10% level, respectively.*

Figure 2: Average Daily Excess Stock Returns of Added to or Deleted from the S&P 500 Constituent Firms Relative to the (NYSE / AMEX / Nasdaq / ARCA) CRSP Value Weighted Return, 60 Days Before and 90 Days After Event, Before October 1989



This figure presents the temporal behavior of added or deleted firms' excess returns around the addition or deletion date (0) for events prior to October 1989.

Table 3 reports the average results of added or deleted firms' excess returns after the S&P US Indexes Committee started pre-announcing the S&P 500 changes in October 1989. Panel A of Table 3 reports results for additions whereas Panel B reports results for deletions. The table shows that added firms experience significant excess returns of 124.08% prior to the addition but no significant excess returns after the addition. Deletions experience significant underperformance of -89.36% prior to deletion and for the surviving firms' significant positive excess returns of 753.58% after the deletion.

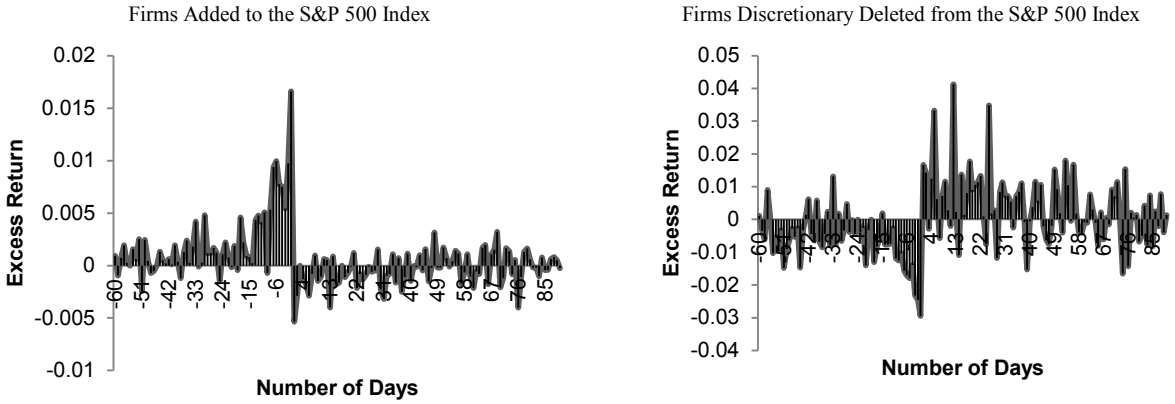
Table 3: Average Daily Excess Stock Returns of Added to or Deleted from the S&P 500 Constituent Firms Relative to the (NYSE / AMEX / Nasdaq / ARCA) CRSP Value Weighted Return, 365 days Before or After the Event, After October 1989

Panel B. Added Firms					
	60 days before	**30 days before**	**30 days after**	**60 days after**	**90 days after**
mean (daily)	0.0022	0.0037	-0.0010	-0.0005	-0.0003
mean (annual)	1.2408	2.8991	-0.3034	-0.1789	-0.1167
mean (%)	124.08***	289.91***	-30.34***	-17.89***	-11.67**
t-test (p-value)	<.0001	<.0001	0.0013	0.0074	0.0395
median (daily)	0.0012	0.0022	-0.0009	-0.0005	-0.0002
median (annual)	0.5402	1.2408	-0.2668	-0.1759	-0.0839
median (%)	54.02***	124.08***	-26.68***	-17.59***	-8.39**
sign test (p-value)	<.0001	<.0001	0.0014	0.0027	0.0149
number of firms	452	452	487	487	487
ADF Zero Mean	0.9771	0.9537	0.0828*	0.0106**	0.0001***
ADF Single Mean	0.9966	0.9868	0.1259	0.0614*	0.0019***
ADF Trend	0.9821	0.6524	0.2027	0.0269**	0.0006***
Panel B. Discretionary Deleted Firms					
	60 days before	**30 days before**	**30 days after**	**60 days after**	**90 days after**
mean (daily)	**-0.0061**	**-0.0088**	**0.0084**	**0.0059**	**0.0039**
mean (annual)	-0.8936	-0.9606	20.2828	7.5358	3.2084
mean (%)	-89.36	-96.06	2028.28	753.58	320.84
t-test (p-value)	<.0001***	<.0001***	0.0008***	<.0001***	0.0003***
median (daily)	-0.0056	-0.0075	0.0082	0.0060	0.0024
median (annual)	-0.8703	-0.9357	18.7178	7.7968	1.3883
median (%)	-87.03	-93.57	1871.78	779.68	138.83
sign test (p-value)	<.0001***	<.0001***	0.0014***	0.0062***	0.008***
number of firms	71	71	71	71	71
ADF Zero Mean	0.9563	0.9996	0.1783	0.0181***	0.002***
ADF Single Mean	0.9792	0.9997	0.0468**	0.0039***	0.0027***
ADF Trend	0.9876	0.9942	0.0769*	0.0011***	<.0001***

This table reports the average results of added or deleted firms' excess returns after October 1989. Panel A reports results for additions. Panel B reports results for deletions. The Augmented Dickey-Fuller test is based on the following Vector Error Correction Model of the excess return series y_t *:* $\Delta y_t = \beta_0 + \delta t + \beta_1 y_{t-1} + \sum_{i=1}^{m} \gamma_i \Delta y_{t-i} + \varepsilon_t$ *. ***, **, * indicate statistical significance at the 1%, 5% and 10% level, respectively.*

The table unit root test results indicate stationarity prior to the addition or deletion event but non-stationarity after the event in the pre-announcement sample. This is in direct contrast to the stationarity in the prior to October 1989 sample. Figure 3 visually presents the temporal behavior of added and deleted firms' excess returns. The figure shows the run-up in prices of firms which are to be added to the index in the period of pre-announcement of the addition, and the decrease in price in this period for firms which are going to be deleted from the index. No patterns are discernible in the after event samples similar to the combined sample results.

Figure 3: Average Daily Excess Stock Returns of Added to or Deleted from the S&P 500 Constituent Firms Relative to the (NYSE / AMEX / Nasdaq / ARCA) CRSP Value Weighted Return, 60 Days Before and 90 Days After Event, After October 1989



This figure presents the temporal behavior of added and deleted firms' excess returns around the addition or deletion date (0) for events after October 1989.

These findings suggest that the pre-announcement of index changes has had a significant impact on the behavior of investors around index changes. Clearly, the pre-announcement has motivated major trading activity in the pre-announcement period, which is in support of the price pressure hypothesis of index changes, which naturally leads to the question – in terms of pricing efficiency, was pre-announcing necessary? The reason for the change in excess return pattern might be due to the involvement of arbitrageurs and speculators who did not participate in trading prior to October 1989. Speculators accumulate stock of firms to be added and short stock of firms to be deleted from the S&P 500 index due to the predictability of the index change. The involvement of speculators might have introduced a new form of stress to replace the stress of the uncertainty of S&P 500 changes which the S&P Committee attempted to alleviate with the start of pre-announcing.

CONCLUDING COMMENTS

In this study we address the question – does the start of pre-announcing of S&P 500 index changes in October 1989 have an effect on the trading pattern of added or deleted firms? We find that prior to October 1989 the excess returns of added or deleted firms follow a white noise process, whereas after the start of pre-announcing the excess returns can be described as non-stationary process. The non-stationarity indicates that through modeling excess profits can be generated after the S&P US Indexes Committee started pre-announcing the index changes. The intention of the S&P US Indexes Committee to start pre-announcement of changes has been to alleviate the pressure on S&P 500 index fund managers when they need to rebalance their portfolio holdings due to an unexpected change in the S&P 500 index constituents. However, with the start of pre-announcing the committee might have introduced inefficiencies due to the involvement of additional arbitrageurs who accumulate stock of firms to be added or short stocks to be deleted which based on the results of the paper has added new type of stress to index fund managers. Which type of stress is better for index fund managers however is debatable and to answer this question clearly more research would be needed in this area.

A natural limitation of the study is the small sample of discretionary deleted firms in the period prior to October 1989, which suggests that the results for this sample need to be interpreted with caution. An additional limitation of the study is the fact that we use only excess returns to assess the benefit of pre-announcement. The data that we use lack institutional information around the addition or deletion event, such as type of investor involved in the trade – index mutual fund, hedge fund, money manager, etc. It would be very interesting to examine institutional participation around the addition or deletion event in a

future research once such data becomes available to us. The direct examination of institutional trading patterns around the addition to or deletion from the S&P 500 index would provide the profession with better understanding of the merits of pre-announcing of index changes.

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