

What's in the News?
Information Content of S&P 500 Additions

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Abstract

I investigate the information content of S&P 500 Index changes by examining the price and volume reaction of the industry and size matching firms of the firms added to the index. Using a sample of S&P 500 additions during 1976-2001, I find a significantly positive price reaction, but no volume reaction, for the matching firms. In addition, the matching-firm price reaction is negatively related to the added firm's weight in its industry. These findings suggest that the Index addition conveys favorable information about the added firm and its industry.

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What's in the News?

Information Content of S&P 500 Additions

The positive price effects of the firms added to the Standard and Poor's 500-stock Index (S&P 500) have been an interesting research subject in the finance literature since first studied by Shleifer (1986), Harris and Gurel (1986), and Jain (1987). However, the question of what drives up the stock price remains unsettled. There are at least two competing hypotheses on the subject, the information hypothesis and the downward sloping demand curve hypothesis.

According to the information hypothesis, the S&P 500 Index addition conveys favorable information about the added stock to the market, and the new information drives up the stock price. Although S&P repeatedly claims that Index additions do not "in any way reflect an opinion on the investment merits of the company," several authors find evidence supporting the information hypothesis.¹ Jain (1987) finds positive announcement price effects of stocks added to the S&P supplementary indices, which were not followed by index funds during the period of his study. Dhillon and Johnson (1991) find that the call options and bonds of firms added to the S&P 500 also react positively to the announcement. Denis, McConnell, Ovtchinnikov, and Yu (2003) find that the added firms experience significant increases in both the analyst earnings forecast and the realized earnings.

According to the downward sloping demand curve hypothesis, when a stock is added to the S&P 500, the additional buying demand from index funds drives up the stock price if the demand curve of the stock slopes downward.²

¹ See, for example, *Wall Street Journal*, October 19, 1995, C21.

² Shleifer (1986), Harris and Gurel (1986), Vijh (1994), Beneish and Whaley (1996), Lynch and Mendenhall (1997), Wurgler and Zhuravskaya (2002), and Barberis, Shleifer, and Wurgler (2005), among others, find evidence consistent with the downward sloping demand curve hypothesis. Hegde and McDermott (2003) find that the price reaction is related to liquidity improvement. Becker-Blease and Paul (2006) further argue that the liquidity improvement leads to higher investment. Chen, Noronha and Singal (2004) find that index addition increases investor awareness of the added stock. For a comprehensive survey of the literature, see Elliott, Van Ness, Walker, and Warr (2006).

Disentangling the price effects of the two hypotheses can be difficult, since both hypotheses predict the same price reaction for the added stock. Therefore, I study the price and volume reaction of the industry and size matching firms of the added firms. The advantage of studying the matching firms is that they are not subject to the excess demand induced by the Index additions. Thus, the price reactions of these firms are unlikely to be the result of the downward sloping demand curve. In addition, the benefits of S&P 500 membership, such as improved liquidity or investor awareness, do not affect the matching firms. Therefore, the price effects of these matching firms, if any, most likely reflect the favorable information about the industry and size segment represented by the firm added to the S&P 500. However, the matching-firm price effects do not capture the firm-level information content of the Index additions, so the total price effects of the new information conveyed by the Index additions are likely to be greater than what I document in this study.

The S&P 500 Index additions may convey new information to the market for two reasons. First, “the guiding principle for inclusion in the S&P 500 is leading companies in leading US industries.” (See Bos and Ruotolo, 2000, page 3) When a firm is added to the Index, S&P certifies it as a leading firm, and certifies the industry of the firm as a leading industry. Even if S&P makes the Index addition decisions based entirely on public information, it may simply have superior analytical skill. Thus, the stock price of the added firm and other firms in the same industry may react positively to the announcement.

Second, index changes require index funds to sell the deleted firms and buy the added firms, which can substantially increase the transaction costs and tracking error of the index funds. Thus, frequent turnover makes an index less attractive to the index funds. S&P certainly wants to retain its index licensing business and believes “that unnecessary and excessive turnover in index membership should be avoided when possible.” (See Blitzer, 2003, page 2) To reduce the Index turnover, S&P may select firms that it believes will be able to meet the Index criteria for longer periods of time. Indeed, S&P acknowledges that index inclusion “does include the assumption that the company is going to remain in business.” (See “S&P 500 Index

Methodology,” Section 3, page 39) Furthermore, S&P may also select firms from the industries that it believes will have greater representation in the economy in the future, since this may help reduce future Index changes. Therefore, the S&P 500 additions may convey information about the added firms and their industries.

In this study, I focus on the information content of S&P 500 additions at the industry level rather than the firm level. Specifically, I form three matching-firm samples based on size and two-, three-, or four-digit SIC codes. It is necessary to match by size, because S&P 500 is an index of large stocks, and therefore the information conveyed by S&P 500 additions are likely to be about the large stocks in an industry.

I find that the industry and size matching firms of the firms added to the S&P 500 react positively to the Index addition announcement. Although the magnitude of the matching-firm price reaction is relatively small, it captures only the segment-level information content of the Index additions. The firm-specific information content can have greater price effects. In addition, the matching-firm price effect may be dampened by the increased competition from the added firm.

To disentangle these effects, I investigate how the added firm’s weight in its industry affects the matching-firm price reaction and I find a negative effect. This result suggests that the S&P 500 Index additions also convey favorable information specifically about the added firms, and the matching firms react negatively to it since they will face more competition from the added firms.

I also study the volume reaction of the matching firms to the Index addition announcement. I find no significant increase in the market adjusted turnover ratio of the matching firms during the time periods surrounding the Index addition announcement date or effective date. This result indicates that their price effects are not driven by trading activities.

The combined evidence suggests that the S&P 500 Index additions convey favorable information about the added stock and its industry, which accounts for at least part of the positive price effects of the added stock.

The paper proceeds as follows. Section I describes the data and methods. Section II reports the empirical results, and Section III concludes.

I. Data and Methods

Using the Factiva news retrieval system, I identify 566 S&P Index additions announced from September 1976, when S&P started to publicly announce the Index changes, to December 2001. I exclude 97 out of the 566 added firms because they are caused by corporate events involving the added firms. In 43 cases, S&P adds the firm to the Index because the firm acquires an existing S&P 500 firm. In 53 cases, the firm is added because it is spun off or carved out by an existing S&P 500 firm. In one case, the Index change is due to the recapitalization of the firm. I also exclude one case in which S&P changes the share class of an existing S&P 500 firm. In the remaining 468 cases, the Index change is usually initiated by some corporate event that requires the deletion of an existing S&P stock, such as acquisitions, spinoffs, liquidations, or bankruptcies.³ In these cases, the S&P Index Committee chooses a new stock to replace the deleted stock. Since the Index Committee makes the selection decision, it may convey new information to the market.

I require the added firms to be available on the Center for Research in Securities Prices (CRSP) database during the three-day window centered on the announcement date, and on the Compustat database for the last fiscal year ending before the announcement date. The added firms must also have valid data for SIC code, stock price, and number of outstanding shares. I exclude one firm with two-digit SIC code of 99 (Nonclassifiable Establishment). These requirements reduce the sample by 41 observations. The net result is a sample of 427 firms added to the S&P 500 during September 1976 to December 2001.

I then construct three matching-firm samples based on industry and size: the first is matched by size and two-digit SIC code, the second by size and three-digit SIC code, and the

³ Since the deleted firm is often involved in some corporate event, I do not study the information effects of S&P 500 deletions. Jain (1987) and Lynch and Mendenhall (1997), among others, find that the deleted firms experience negative abnormal returns around the deletion announcement.

third by size and four-digit SIC code. For each of the 427 added firms, I first identify a subset of firms that are available on both the Compustat and the CRSP databases, with the same two-, three-, or four-digit SIC code as the added firm, and with the market value between 70% and 130% of the added firm market value. Since firms added to or deleted from the S&P 500 are known to have abnormal returns around the announcement date and the effective date, I exclude those firms that are added to or deleted from the Index in the same year as the sample firm from the potential matching-firm universe.⁴ Next, I select the matching firm with the market value closest to the sample firm from the subsets. I find 390 matching firms based on size and two-digit SIC code, 300 matching firms based on size and three-digit SIC code, and 242 matching firms based on size and four-digit SIC code.

Figure 1 shows the year-by-year distribution of the S&P 500 additions and their matching firms. There is no concentration of index changes during any individual year. The larger number of S&P 500 changes during the late 1980s and late 1990s was caused by the merger waves during the two periods.

Insert Figure 1 here

Panel A of Table I shows that the matching firms are of similar size to the firms added to S&P 500. Panel B shows that the industry distribution of the matching firms is similar to that of the added firms.

Insert Table I here

II. Empirical Results

This section presents the empirical results.

⁴ I do not exclude all firms that are added to or deleted from the S&P 500 from the potential matching-firm universe for two reasons. First, these firms make up the bulk of the firms in this size category. Excluding them will leave very few firms in the matching-firm universe. Second, my focus is on the matching-firm price reaction, and I do not use the matching firms as performance benchmarks. Thus, it is only necessary to exclude the firms that are added or deleted in the same year as the sample firm from the matching-firm universe.

A. Announcement Price Reaction of the Firms Added to the S&P 500

I measure the price reaction of the firms added to S&P 500 with the market adjusted cumulative abnormal return (CAR) over a three-day window centered on the Index addition announcement date, which is the last trading day before the Factiva news publication date. Consistent with prior studies, I find that the firms added to the S&P 500 react positively to the announcement. Table II shows that the average and median CARs of the added firms equal 4.13% and 3.74%, both are statistically significant at the 1% level.

Insert Table II here

According to the downward sloping demand curve hypothesis, the extra demand from index funds drives up the price of the added stock because there is no perfect substitute for any individual stock. If this is the case, the stocks with closer substitutes may be subject to lower price pressure and experience lower price reaction. The availability of a matching firm in the two-, three-, and four-digit SIC code groups provides a measure of how close a substitute is available. Thus, I can test the downward sloping demand curve hypothesis by comparing the CARs of the added firms grouped by whether they have a matching firm in the four-, three-, and two-digit SIC code groups. Contrary to the predictions of the downward sloping demand curve hypothesis, Table II shows that the added firms with the closest substitutes experience the highest price reaction to the S&P 500 Index addition announcement. The average CAR of the added firms with size and four-digit SIC code matching firms is 4.42%, but the average CAR of the added firms without any matching firm is only 3.5%. The median CARs show a similar pattern. This result suggests that the Index addition announcement price effects cannot be driven entirely by the extra demand from index funds. Information about the added firm probably plays a role here.⁵

⁵ A possible explanation of the result based on information is as follows. An added firm with very close substitutes may also face more competition for the addition slot to S&P 500. When S&P decides to add this firm but not its competitors, there may be more favorable information about the added firm than in a case where the added firm faces very little competition for the Index slot.

B. Announcement Price Reaction of the Industry and Size Matching firms

The industry and size matching firms may react to the S&P 500 Index addition announcement in two different ways. First, if the Index additions convey favorable information about the industry and size segment of the added firm, the matching-firm stock price will react positively to the announcements. I label this positive reaction the information effect. Second, since the added firm and the matching firm are from the same industry and size segment, they may be competitors. If the Index addition also conveys favorable information specific to the added firm, it may not be good news for the matching firm, and its stock price may be adversely affected. I label this negative reaction the competition effect.

Table III shows that the industry and size matching firms experience a positive price reaction around the Index addition announcement. The average and median announcement abnormal returns of the matching firms based on size and two-digit SIC code equal 0.55% and 0.4%, statistically significant at the 1% and 5% level, respectively. The corresponding abnormal returns of the matching firms based on size and three-digit SIC code are 0.82% and 0.46%, statistically significant at the 1% and 10% level, respectively. Overall, the results show that the S&P 500 Index additions convey favorable information about the industry and size segment of the added firms.

On average, as much as 20% ($0.82\% \div 4.13\% = 0.2$) of the total price effect associated with S&P 500 Index additions can be explained by the segment-level information content conveyed by the announcements. The magnitude of the matching-firm price reaction is relatively small. However, there is probably more information about the particular firm added to the Index, and the total price effect caused by the information content of the Index additions can be greater than what I document. In addition, the information effect of the Index additions on the matching firms may also be partially offset by the competition effect.

Insert Table III here

C. Separating the Competition Effect and the Information Effect

The matching-firm price effects I document above are the combined result of the positive information effects and the negative competition effects. Here, I try to separate the two. I conjecture that the competition effect should be related to the added firm's weight in the industry and size segment. Intuitively, if the added firm is a major player in the segment, then its good performance in the future may hurt the market of other firms in the same segment. Conversely, if the added firm is one of many firms in the segment, its good performance in the future might not have much impact on other firms.

I test the prediction by running regressions of the matching-firm announcement abnormal returns on the added firm's weight in its industry and size segment. I calculate the weight of an added firm in its segment as the added firm's market value of equity divided by the total market value of equity of all firms in the segment. Since I have three matching-firm samples based on size and two-, three-, or four-digit SIC codes, I define the segments accordingly.

Table IV shows the regression results for the three matching-firm samples. Consistent with my prediction, the coefficient of the weight of the added firm in its segment is negative in all three regressions, statistically significant at 5% in Regression (IV.1) and at 10% in Regressions (IV.2) and (IV.3). The existence of the competition effect suggests that the S&P 500 additions also convey favorable information specific to the added firm. In addition, the intercepts of the regressions can be interpreted as the information effects of the matching firms when no competition effect is present. On average, the industry level information effect of S&P 500 additions is about 1.1% (average of the three intercepts), or about 27% of the total price effects ($1.1\% \div 4.13\% = 0.27$).

Insert Table IV here

D. Volume Effects of the Firms Added to S&P 500 and Their Industry and Size Matching firms

Prior studies find that firms added to S&P 500 experience a sharp increase in trading volume over periods surrounding the announcement date and the effective date.⁶ These studies attribute the increase in volume to the index funds buying, and other investors selling, the added stocks. One may argue that the investors who sell the added stocks might buy the industry and size matching stocks to balance the composition of their portfolio. As a result, the industry and size matching stocks may also face more demand, and the stock price may increase if their demand curves also slope downward.

To investigate this possibility, I study the trading volume of the matching firms over periods surrounding the Index addition announcement date and effective date. To reduce the influence of firms with very large volume on the market volume, I measure the trading volume with an abnormal turnover ratio. The abnormal turnover ratio of stock i over the Index addition announcement window equals

$$\text{Abnormal turnover ratio for stock } i = \frac{\frac{1}{3} \times \sum_{t=-1}^{AD+1} \frac{T_{i,t}}{T_{m,t}}}{\frac{1}{250} \times \sum_{t=-251}^{AD-2} \frac{T_{i,t}}{T_{m,t}}} - 1 \quad (1)$$

where $T_{i,t}$ is the turnover of stock i in day t , $T_{m,t}$ is the turnover of the market in day t , and AD is the Index addition announcement date. The numerator in Equation (1) is the average market-adjusted turnover over the event period of a three-day window centered on the announcement date, and the denominator is the average market adjusted turnover over the reference period of a 250-day window ending two days before the announcement date. Following the literature convention, I define the market turnover as the average turnover of all NYSE stocks. I calculate the abnormal turnover ratio surrounding the effective date (ED) by using the event period of a three-day window centered on the effective date but the same reference period.

⁶ See Harris and Gurel (1986), Lynch and Mendenhall (1997), Elliot and Warr (2003), and Chen, Noronha, and Singal (2004)

Table V shows the abnormal turnover ratios of the stocks added to S&P 500 and their industry and size matching stocks over the announcement window and the effective window. Consistent with prior studies, I find the added stocks experience a sharp increase in trading volume over both windows, with the average and median abnormal turnover ratios of 2.46 and 1.36 over [AD-1, AD+1] and of 4.10 and 2.71 over [ED-1, ED+1]. However, there is no evidence that the matching stocks also have higher than normal trading volume. For the three matching-stock samples based on size and two-, three-, or four-digit SIC code, the average abnormal turnover ratios are around zero and statistically insignificant over both the announcement window and the effective window. The median abnormal turnover ratios of the matching firms are significantly negative over both windows, possibly due to the skewness of trading volume. Therefore, the industry and size matching stocks do not face extra demand when their peers are added to the S&P 500, and their announcement price effects are not driven by trading activities.

Insert Table V here

III. Conclusion

Twenty years after the initial documentation of the positive price effects of S&P 500 Index additions, what drives up the stock price remains unclear. While many authors favor the downward sloping demand curve hypothesis, Jain (1987), Dillon and Johnson (1991), and Denis et al (2003) argue that the new information conveyed by the Index addition can play a role. In this paper, I study the price and volume reaction of the peers of added stocks. I find that the industry and size matching stocks of the added stocks also have significantly positive price reaction. However, the trading volume of these matching stocks does not increase. This evidence suggests that the S&P 500 Index additions convey favorable information about the industry and size segment represented by the added stock, which explains at least part of the price effect of the added stock. A greater proportion of the price effect may be explained by the new information about the specific firms added to the Index. My finding that the matching-firm stock price

reaction decreases when the added firm has a larger weight in its industry suggests that this is the case.

Furthermore, my evidence helps to disentangle the relation between information and index additions. Denis et al (2003) argue that the relation between the information and the index addition decision is unclear can go either direction. It is possible that the favorable information S&P has about a firm and its industry leads to the firm's addition to S&P 500. It is also possible that the index addition event itself leads to better future performance of the added firms. My finding that the industry and size matching stocks also react positively to the Index addition announcement is consistent with the first possibility, but not the second. Therefore, the Index addition is more likely to be the result of the information about the added firm's better future performance than the cause of the added firm's better future performance.

Finally, my evidence is not against the downward sloping demand curve hypothesis. The extra demand from index funds may still be one source of the positive price reaction of the stocks added to S&P 500.

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Table I. Sample Description

My starting sample comprises 566 firms added to the S&P500 Index during September 1976 – December 2001. Among the 566 firms, I exclude 98 because they are added as the result of a merger, acquisition, spin-off, carve-out, recapitalization, or a change in share class. I drop another 40 firms because their data are not available on the CRSP or the Compustat databases. I drop one firm because it has a two-digit SIC code of 99 (unclassifiable establishment). The net result is the final sample of 427 added firms. For each of the 427 firms, I find matching firms based on industry affiliation (two-, three-, or four-digit SIC codes) and size (market value of equity). To find a size and two-digit SIC code matching firm, I first identify a subset of firms that are available on both the Compustat and the CRSP databases, not added to or deleted from the S&P500 Index in the same year as the added firm, with the same two-digit SIC code as the added firm, and with the market value between 70% and 130% of the added firm market value. I then select from this subset the matching firm with the closest market value to the added firm. Matching firms based on three- or four-digit SIC code are identified using the same procedure. I find 390 size and two-digit SIC code matching firms, 300 size and three-digit SIC code matching firms, and 242 size and four-digit SIC matching firms. I obtain the SIC codes and the corresponding industry descriptions from Compustat. Panel A reports the size (market value of equity) of the added firms and the matching firms, and the relative size ratio between the matching firms and added firms. Panel B reports the number of added firms and matching firm in each broad industry defined by two-digit SIC code. N1 is the number of added firms in the broad industry defined by two-digit SIC code; N2 is the number of matching firms based on size and two-digit SIC code in the broad industry defined by two-digit SIC code; N3 is the number of matching firms based on size and three-digit SIC code in the broad industry defined by two-digit SIC code; N4 is the number of matching firms based on size and four-digit SIC code in the broad industry defined by two-digit SIC code.

<i>Panel A. Size of the added and matching firms</i>					
	N	Market value of equity (\$billion)		Relative size ratio (Matching firm / Added firm)	
		Mean	Median	Mean	Median
Added firms	427	3.37	2.00		
Matching firms based on size and two-digit SIC code	390	3.37	2.20	0.99	1.00
Matching firms based on size and three-digit SIC code	300	3.54	2.40	0.97	0.99
Matching firms based on size and four-digit SIC code	242	3.65	2.35	0.97	0.98

(Table I continued)

<i>Panel B. Industry distribution of the added and matching firms</i>											
Industry Description	Two-digit SIC code	N1	N2	N3	N4	Industry Description	Two-digit SIC code	N1	N2	N3	N4
Agriculture production – crop	01	1	1	1	1	Rubber and miscellaneous plastic products	30	7	7	2	2
Metal mining	10	4	4	4	4	Leather and leather products	31	1	0	0	0
Oil and gas extraction	13	12	12	11	10	Stone, clay, glass, and concrete products	32	4	2	1	0
Mining, quarry and non-metal minerals	14	2	2	2	2	Primary metal industries	33	4	4	3	2
Building construction, general construction, and operative builders	15	3	3	2	2	Fabricated metal, Ex machinery, Trans equipment	34	5	5	1	1
Construction – Special trade	17	1	0	0	0	Industrial, commercial machinery, and computer equipment	35	34	34	30	17
Food and kindred products	20	8	8	4	3	Electric, other electronic equipment, excluding computer	36	34	34	31	26
Tobacco products	21	1	0	0	0	Transportation equipment	37	5	5	3	1
Textile mill products	22	5	3	1	0	Measurement instruments, photo gadgets, and watches	38	17	17	14	7
Apparel and other finished products	23	5	3	2	2	Miscellaneous manufacturing industries	39	4	4	2	0
Furniture and fixtures	25	3	2	1	1	Railroad transportation	40	2	2	2	2
Paper and allied products	26	6	6	5	5						
Printing, publishing and allied	27	7	7	2	2						
Chemical and allied products	28	23	23	21	15						
Petroleum refining and related industries	29	4	2	2	2						

(Table I continued)

<i>Panel B. Industry distribution of the added and matching firms</i>											
Industry Description	Two-digit SIC code	N1	N2	N3	N4	Industry Description	Two-digit SIC code	N1	N2	N3	N4
Transit & passenger transportation	41	1	0	0	0	Depository institutions	60	39	39	37	37
Motor freight transportation, warehouse	42	2	1	1	1	Non-depository credit institutions	61	7	7	1	1
Water transportation	44	1	0	0	0	Security and commodity brokers	62	8	7	6	6
Transportation by air	45	3	3	3	3	Insurance carriers	63	19	19	12	12
Communications	48	15	15	13	10	Insurance agents, brokers, and services	64	4	3	3	3
Electricity, gas, and sanitary services	49	21	21	17	14	Holdings and other investment offices	67	5	3	3	0
Durable goods – wholesale	50	2	2	0	0	Hotels, other lodging places	70	1	0	0	0
Non-durable goods – wholesale	51	8	7	4	4	Personal services	72	3	0	0	0
Building material, hardware, garden – retail	52	2	1	1	1	Business services	73	34	31	27	20
General merchandise stores	53	5	4	4	4	Auto repair, services, parking	75	1	0	0	0
Food stores	54	5	5	4	4	Motion pictures	78	4	3	3	2
Auto dealers, gas stations	55	2	0	0	0	Amusements and recreation	79	2	2	2	2
Apparel and accessory stores	56	5	5	2	2	Health services	80	7	6	1	0
Home furniture and equipment stores	57	3	2	1	1	Educational services	82	1	1	1	1
Eating and drinking places	58	6	6	6	6	Engineering, accounting, research, management, and relation services	87	3	2	0	0
Miscellaneous retail	59	6	5	1	1	Total		427	390	300	242

Table II. S&P 500 Addition Announcement Price Reaction of the Added Firms

In my sample there are 427 added firms, 390 size and two-digit SIC code matching firms, 300 size and three-digit SIC code matching firms, and 242 size and four-digit matching firms. Therefore, among the 427 added firms, 242 firms have matching firms with the same four-digit SIC code, 58 firms have matching firms with the same three-digit SIC code but not the same four-digit SIC code, 90 firms have matching firms with the same two-digit SIC code but not the same three-digit SIC code, and 37 firms do not have matching firms with the same two-digit SIC code. I calculate the cumulative abnormal returns (CARs) by subtracting the cumulative market returns from the cumulative added firm returns over [AD-1, AD+1], where AD denotes the S&P 500 addition announcement date. The announcement date is the last trading day before the Factiva news publication date. I measure the market return by the CRSP value-weighted index return including dividends (VWRETD). The statistical significance of the mean returns is determined by the *t*-statistics, and of the median returns by the binomial *z*-statistics.

	N	Mean CAR (%)	t- statistic	Median CAR (%)	z- statistic
Entire sample	427	4.13	15.84 ^{***}	3.74	14.18 ^{***}
Firms with size and four-digit SIC code matching firms	242	4.42	11.88 ^{***}	3.94	11.06 ^{***}
Firms with size and three-digit SIC code matching firms	58	3.54	4.93 ^{***}	3.48	4.73 ^{***}
Firms with size and two-digit SIC code matching firms	90	3.98	7.87 ^{***}	3.75	6.96 ^{***}
Firms without industry and size matching firms	37	3.50	5.91 ^{***}	3.62	3.12 ^{***}

^{***} Significant at the 0.01 level.

^{**} Significant at the 0.05 level.

^{*} Significant at the 0.10 level.

Table III. S&P 500 Addition Announcement Price Reaction of the Industry and Size Matching Firms

I calculate the cumulative abnormal returns (CARs) for the matching-firm samples by subtracting the cumulative market returns from the cumulative matching-firm returns over [AD-1, AD+1], where AD denotes the S&P 500 addition announcement date. The announcement date is the last trading day before the Factiva news publication date. The market return equals the CRSP value-weighted index return including dividends (VWRETD). The statistical significance of the mean returns is determined by the t -statistics, and of the median returns by the binomial z -statistics.

	N	Mean CAR (%)	t- statistic	Median CAR (%)	z- statistic
Size and two-digit SIC code matching firms	390	0.55	3.08***	0.40	2.13**
Size and three-digit SIC code matching firms	300	0.82	3.30***	0.46	1.85*
Size and four-digit SIC code matching firms	242	0.32	1.21	0.21	0.90

*** Significant at the 0.01 level.

** Significant at the 0.05 level.

* Significant at the 0.10 level.

Table IV. The Matching-Firm Price Reaction and the Added Firm's Weight in the Industry and Size Segment

In regression (IV.1), the dependent variable is the market-adjusted cumulative abnormal return (CAR) of the size and two-digit SIC code matching firms over period [AD-1, AD+1], where AD denotes the S&P 500 addition announcement date. The independent variable is the added firm's weight in its industry and size segment, which equals the added firm's market value of equity divided by the total market value of equity of all firms in the segment. The industry and size segment includes all firms with the same two-digit SIC code as the added firm, and with the market value of equity between 70% and 130% of the added firm's market value of equity. In regressions (IV.2) and (IV.3), the dependent and the independent variables are similarly defined as in regression (IV.1), with the exception that the matching-firm sample and the industry and size segment are based on the three-digit SIC code in regression (IV.2) and the four-digit SIC code in regression (IV.3). *t*-statistics are in parentheses.

Independent variables and statistics	Dependent variable = Industry and size matching firm CAR over [AD-1, AD+1]		
	(IV.1)	(IV.2)	(IV.3)
Intercept	0.011 (3.66) ^{***}	0.013 (3.40) ^{***}	0.009 (2.15) ^{**}
The weight of an added firm in its industry and size segment	-0.027 (-2.22) ^{**}	-0.031 (-1.69) [*]	-0.035 (-1.79) [*]
N	390	300	242
Adjusted R ²	0.010	0.006	0.009

^{***} Significant at the 0.01 level.

^{**} Significant at the 0.05 level.

^{*} Significant at the 0.10 level.

Table V. Abnormal Turnover Ratios of the Firms Added to S&P 500 and Their Matching Firms

The abnormal turnover ratio equals the average market adjusted turnover during [AD-1, AD+1] or [ED-1, ED+1] divided by the pre-announcement average market adjusted turnover during [AD-251, AD-2] minus one. Daily turnover equals the daily trading volume divided by the number of shares outstanding. The market turnover is the average turnover of all NYSE stocks. Several added firms and matching firms do not have valid volume data available around the S&P 500 addition announcement date (AD) or effective date (ED). Therefore, the sample size in this table is slightly smaller than that in the earlier tables. The statistical significance of the mean ratios is determined by the *t*-statistics, and of the median ratios by the binomial *z*-statistics.

<i>Panel A. Abnormal turnover ratio during [AD-1,AD+1]</i>					
	N	Mean	t- statistic	Median	Z- statistic
Firms added to S&P 500	421	2.46	13.95***	1.36	17.50***
Size and two-digit SIC code matching firms	384	0.01	0.28	-0.18	-5.92***
Size and three-digit SIC code matching firms	293	-0.05	-1.13	-0.22	-6.60***
Size and four-digit SIC code matching firms	237	-0.04	-0.79	-0.19	-5.13***
<i>Panel B. Abnormal turnover ratio during [ED-1,ED+1]</i>					
	N	Mean	t- statistic	Median	Z- statistic
Firms added to S&P 500	421	4.10	19.27***	2.71	19.06***
Size and two-digit SIC code matching firms	384	-0.01	-0.18	-0.22	-6.02***
Size and three-digit SIC code matching firms	293	-0.02	-0.45	-0.22	-6.25***
Size and four-digit SIC code matching firms	237	-0.02	-0.35	-0.18	-5.65***

*** Significant at the 0.01 level.

** Significant at the 0.05 level.

* Significant at the 0.10 level.

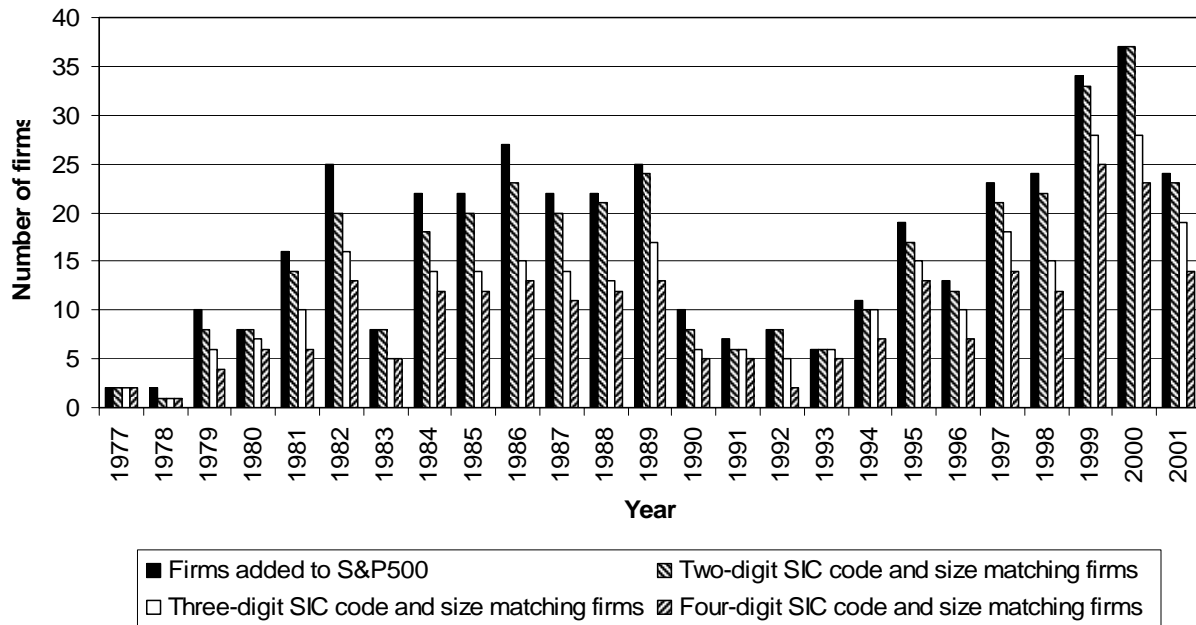


Figure 1. Year-by-Year Distribution of S&P 500 Additions and Their Matching Firms.