

Option Listing Effects and the Role of Confounding Events

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Empirical studies find that newly optionable stocks exhibit positive cumulative excess returns. Previous research, however, is split on the presence of an announcement effect for pending listings. This study finds that the presence in the sample of contemporaneous announcements—particularly announcements of listings themselves—skews the results in favor of rejecting the null hypothesis. When the data points in question are removed, no significant announcement period effect is detected. These results imply that for option listings, and perhaps other types of events, the failure to remove observations with simultaneous and potentially confounding announcements not only introduces noise into an analysis, but also can lead to biased results.

INTRODUCTION

Numerous studies investigate the characteristics that enable options to contribute uniquely to the investment opportunity set. Theoretical work by Ross (1976), Arditti and John (1980), Green and Jarrow (1987), and Nachman (1988) shows that instruments with contingent claims on assets can enhance significantly the available payoffs under certain states of nature. The existence of options markets is hypothesized to increase allocational efficiency by allowing investors to pursue strategies that were otherwise economically infeasible. A further implication is that asset prices will reflect information more efficiently when option trading is allowed,¹ leading to the prediction that new option listings will increase the value of the underlying stock. Extant empirical work by Conrad (1989) and Detemple and Jorion (1990) largely supports these hypotheses.

* We thank Joseph Golec for helpful comments.

¹ Figlewski and Webb (1993) give a thorough summary of the potential efficiency enhancements provided by option markets.

The empirical work to date over the precise timing of the common stock price effects conflicts, however. This paper reexamines the effect of option listing on the underlying firm's common stock. The main analyses are conducted for two different samples: 1) all option listing events, and 2) listings for which potentially contaminating events are removed. The results indicate that removing confounding events is critically important for this type of research and that the presence of confounding events is responsible for some earlier findings. One conclusion of this study is that the early benefits accruing to shareholders as a result of option listings were less substantial than was previously believed.

RELATED LITERATURE

OPTION LISTING EFFECTS

Previous studies examine the effect of option listing on return and volatility characteristics of the underlying common stock. Several papers generally confirm the notion that optionable stocks exhibit decreased volatility around option listing dates. Work by Conrad (1989) and Detemple and Jorion (1990) also shows a positive stock price response around the listing date.

This positive listing effect is most pronounced before April 21, 1982, when trading in options on S&P 500 index futures contracts began. According to Detemple and Jorion, the period following this event is characterized by a neutral market response to option listing. Detemple and Jorion (1988) show in a numerical analysis that any market-spanning benefits that would accrue from individual stock option listing are largely available through the use of index options. Their later (1990) empirical results suggest that with index-related options already available, individual stock options are of diminished value to investors in the underlying asset.

Both Conrad and Detemple and Jorion find statistically insignificant excess returns on days on which intended listings are announced. Detemple and Jorion, however, report announcement-period three-day excess returns greater than 2 percent for the June 24, 1975 through March 26, 1982 subperiod. Excess returns before and after that period are found to be statistically insignificant. Taken together, Detemple and Jorion's announcement and listing period results are interpreted as reflecting the market's gradual realization of the economic benefits of listed options and the diminishing marginal benefits as markets became more complete.² Conrad, on the other hand, explains her significant listing and insignificant announcement findings as reflecting inventory buildup by dealers and floor traders anticipating option introduction.

CONTEMPORANEOUS ANNOUNCEMENTS IN EVENT STUDIES

Fama, Fisher, Jensen, and Roll's (1969) seminal paper on stock splits was among the first to acknowledge the event study as an important research technique in financial economics. In the interim, hundreds of research papers have employed event study methodology in various forms. The results of such studies have been widely reported and have influenced corporate policy in such diverse areas as mergers, capital acquisition, and

² This result also brings to mind the papers of Dann and Mikkelsen (1984) and Linn and Pinegar (1988) that report statistically significant market reactions to the announcement of a pending convertible bond or preferred stock issuance, as well as to the issuance event itself.

management compensation. In some cases, researchers have been interested in examining multiple, nearly simultaneous announcements. For example, Kane, Lee, and Marcus (1984) examine contemporaneous dividend and earnings announcements, finding significant cross-sectional stock excess return variability. Excess returns are shown to depend on the directional consistency of the two separate announcements.

Researchers most often are interested in isolating a sample characterized by just one type of event. Such analyses are complicated when managers make multiple public announcements nearly simultaneously, as disentangling the effects of the announcement under study from the effects of contemporaneous news is impossible. Observations with potentially confounding announcements usually are dropped from the analysis. There is usually no *a priori* reason to believe that simultaneous announcements should be viewed by the market as consistently positive or negative, however, and hence they should not be a source of bias. Failing to eliminate such observations merely should introduce noise that will make unlikely the rejection of the null hypothesis. Biased results can occur when a sample contains a preponderance of simultaneous announcements with similar interpretations, either positive or negative.

The potential for this noise problem is exemplified in a recent paper by Dhillon and Johnson (1994) on the effect of dividend changes. The authors trim their sample by more than 20 percent due to the presence of potentially confounding announcements within two days of dividend declaration dates. The results of Dhillon and Johnson's paper, with its carefully cleaned sample, contrast with those of an earlier published study. While acknowledging several plausible explanations for the observed differences, Dhillon and Johnson indicate that the presence of potentially confounding announcements in the earlier work might have "obscure(d) the effect" that was detected later (p. 289).

Dhillon and Johnson's work is not the only example of this phenomenon. In a study of the use of convertible debt versus debt/warrant financing, Long and Sefcik (1990) present their results for two samples: 1) all debt/warrant registrations, and 2) a "clean" sample of debt/warrant registrations that "excludes firms whose offering was contaminated by concurrent events or by confounding transactional complexities" (p. 26). Use of the clean sample led to statistically significant findings in two cases for which the whole sample did not yield significance. (See their Exhibits 4 and 5.)

DATA AND EMPIRICAL METHODS

The basic sample for this study was obtained from the Chicago Board Options Exchange (CBOE). It consists of 320 option listings on the CBOE and American Stock Exchange from April 26, 1973 through December 16, 1986. The final sample, portrayed chronologically in Table 1, consists of 302 listings. Listings are retained if the underlying stock trades on the New York Stock Exchange or American Stock Exchange and if daily returns are available from the CRSP tapes. Potentially confounding events are identified using *The Wall Street Journal Index*.³ Over 27 percent of the listings in the sample

³ Potentially confounding events represent any event that prior research has shown to have, on average, a significant impact on stock prices. Such events affecting the present sample include dividend increases and decreases (see Aharony and Swary, 1980; Woolridge, 1983), earnings announcements (Ball and Brown, 1968), earnings forecasts by management (Patell, 1976), merger activity (Jensen and Ruback, 1983), lawsuits against the firm (Engelmann and Cornell, 1988), stock offerings (Masulis and Korwar, 1986), stock repur-

Table 1—Chronological Distribution of Call Option Listings

Year	Option Listings
1973	31
1974	8
1975	82
1976	21
1977	4
1978	2
1979	0
1980	42
1981	6
1982	45
1983	17
1984	11
1985	17
1986	16
Total	302

are accompanied by such potentially confounding events. *The Wall Street Journal Index* also is used to find announcement dates for pending listings. For all listings in the final sample, returns for the underlying stock must be found on the CRSP tapes.

Event study methodology is used to detect excess returns for firms with optionable stock around announcement and listing dates. In addition to the choice of the sample time period, the following steps are taken in order to maintain comparability with Detemple and Jorion (1990): (1) the sample is constrained to the 1973-1986 time period; (2) a mean-adjusted returns approach is used, with a pre-event window of days -60 through -7; (3) excess returns for listing period returns are estimated for day 0, days -5 through +5, and days -5 through +7; (4) *Wall Street Journal* reports are counted as true announcements only if a specific intended listing day is given and if the listing date follows the announcement date by six or fewer days; (5) announcement period excess returns are evaluated for days -1 through +1; and (6) the analyses are conducted for three separate time periods.

RESULTS

Panel A of Table 2 contains listing period 11 day cumulative excess returns (CERs) that are similar in magnitude (2.69 percent) to those found by Detemple and Jorion (2.68 percent). Also consistent with the prior study, panels B and C show positive, statistically significant CERs for two subperiods, 1973-1975, and 1975-1982. CERs for the final subperiod, shown in panel D, are statistically insignificant. The table indicates that, even after listings with potentially confounding events are deleted from the sample, the strong positive results in both the whole period and the first two subperiods hold.

chases (Dann, 1981), stock dividends (Grinblatt, Masulis, and Titman, 1984), capital expenditure announcements (McConnell and Muscarella, 1985), divestitures (Alexander, Benson, and Kampmeyer, 1984), exchange listing of common stock (Ying, Lewellen, Schlarbaum, and Lease, 1977), convertible debt issuance (Dann and Mikkelsen, 1984), and being recommended in *The Wall Street Journal's* "Heard on the Street" column (Liu, Smith, and Syed, 1990). Furthermore, because Detemple and Jorion (1990) demonstrate that announcements of pending option listings are wealth-changing events in their own right, observations are excluded if the announcement date for a pending listing falls within two days of the listing date itself.

Table 2—Cumulative Excess Returns Around Call Option Listing Dates

Panel A shows listing period cumulative excess returns to common stockholders of firms with newly optionable stock between April 26, 1973 and December 12, 1986. Excess returns are computed for event day 0 (the CBOE or AMEX listing date) and days -5 through +5. Listing period excess returns where announcements occur within six days before listing are computed for days -5 through +7. All analyses are conducted for the entire sample and then repeated for events that are uncontaminated by various contemporaneous announcements. Panels B, C, and D show option listing effects for three time subperiods. Asterisks beside Pos:Neg indicate the significance of the test statistic for the generalized sign test. t-statistics are in parentheses. Significance at the .10, .05, and .01 levels is denoted by *, **, and ***, respectively (one tailed test)

Sample	Listing Date	11 Day	N	13 Day	
	Excess Return	Excess Return		Excess Return	Pos:Neg
Panel A: Cumulative excess returns for the whole sample: listings between 4/26/73 and 12/12/86					
Total Sample	0.67 (2.69)***	2.69% (3.28)***	302	3.47% (2.46)***	61:33***
Sample Without Contaminants	0.68 (2.52)***	3.08% (3.43)***	218	2.95% (1.99)**	40:19***
Panel B: Cumulative excess returns around listings between 4/26/73 and 6/23/75					
Total Subsample	1.01 (2.15)**	3.21% (2.07)**	101	2.46% (1.26)	30:17**
Subsample without Contaminants	1.06 (1.99)**	4.74% (2.69)***	66	1.81% (0.73)	17:9**
Panel C: Cumulative excess returns around listings between 6/24/75 and 3/26/82					
Total Subsample	0.93% (2.36)**	4.95% (3.79)***	105	5.63% (2.56)***	25:11***
Subsample Without Contaminants	0.93% (2.25)**	5.48% (4.02)***	81	3.45% (1.91)**	19:10**
Panel D: Cumulative excess returns around listings between 3/27/82 and 12/12/86					
Total Subsample	0.01% (0.04)	0.32 ((0.30)	96	0.89% (0.29)	4:7
Subsample Without Contaminants	0.06% (0.16)	1.18 ((0.99)	71	6.80% (1.59)	4:0**

These findings reinforce Detemple and Jorion's contention that the market viewed option introduction highly favorably, and increasingly so after an initial learning phase. As successive listings of equity options as well as index options made markets more complete, the marginal spanning benefit diminished considerably. According to Detemple and Jorion's argument, new option listings eventually became unimportant events from the perspective of market completeness, and insignificant CERs resulted.

The issue of listing announcements, however, is an open question, as the findings of Conrad (1989) and Detemple and Jorion conflict. As Table 3 shows, even for Listings in this study the nonparametric generalized sign test indicates significance for the entire sample of 94 announcements.⁴ Consistent with Detemple and Jorion's results, the sign on the excess returns for the first subperiod is negative. For the second subperiod excess returns are positive, and in the final subperiod they are not statistically different from zero. Even when observations with nonlisting contaminants (e.g., listings with contem-

⁴ Despite the aforementioned efforts to achieve comparability with the Detemple and Jorion study, three passes through *The Wall Street Journal Index* yielded only 94 announcements. Detemple and Jorion perform their analysis on 122 announcements.

Table 3—Cumulative Excess Returns Around the Announcement of a Planned Call Option Listing

Panel A shows announcement period cumulative excess returns to common stockholders of firms with newly optionable stock between April 26, 1973 and December 16, 1986. Excess returns are computed for event day 0 (*The Wall Street Journal* announcement date) and days -1 through +1. The analysis is conducted for the whole sample and then repeated for events that are uncontaminated by contemporaneous announcements of various types. Panels B, C, and D portray announcement period results for three time subperiods. Asterisks beside Pos:Neg indicate the significance of the test statistic for the generalized sign test. Significance at the .10, .05, and .01 levels is denoted by *, **, and ***, respectively (one tailed test)

Sample	Announcement Date		Three Day		Three Day Excess Return	N
	Excess Return	t-statistic	Excess Return	t-statistic	Pos:Neg	
Panel A: All announcement period cumulative excess returns for listings between 4/26/73 and 12/31/88						
Total Sample	-0.34%	(-0.84)	0.24%	(0.38)	39:55*	94
Sample Without Contaminants	-0.24%	(-0.64)	0.23%	(0.36)	33:47*	80
Sample Without Contaminants or Listings	-0.15%	(-0.31)	0.64%	(0.80)	26:32	58
Panel B: Announcement period cumulative excess returns for listings between 4/26/73 and 6/23/75						
Total Subsample	-1.13%	(-2.02)**	-0.55%	(-0.57)	13:34***	47
Subsample Without Contaminants	-0.91%	(-1.55)*	-0.42%	(-0.42)	11:27***	38
Subsample W/out Contaminants or Listings	-0.22%	(-0.31)	0.81%	(0.65)	11:18	29
Panel C: Announcement period cumulative excess returns for listings between 6/24/75 and 3/26/82						
Total Subsample	0.72%	(1.44)*	1.48%	(1.70)**	22:14*	36
Subsample Without Contaminants	0.65%	(1.36)*	1.42%	(1.72)**	19:13	32
Subsample W/out Contaminants or Listings	0.00%	(0.00)	0.65%	(0.63)	14:12	26
Panel D: Announcement period cumulative excess returns for listings between 3/27/82 and 12/16/86						
Total Subsample	-0.21%	(-0.22)	-0.40%	(-0.24)	4:7	11
Subsample Without Contaminants	-0.65%	(-0.55)	-1.04%	(-0.60)	3:7	10
Subsample W/out Contaminants or Listings	-0.64%	(-0.45)	-1.19%	(-0.48)	1:2	3

poraneous dividend or earnings announcements) are removed, statistical significance for the first two subperiods remains. As Detemple and Jorion observe (p. 798), however, many listings are made almost immediately following the announcement date. Hence, day +1 for the announcement period also may be day -1 or day 0 for the listing period. Especially in view of the highly significant results for Listings, it is important that the announcement effect be disentangled from the impact of the listing itself. When observations with listings made within two days after announcement are removed, the returns for the whole sample and all subperiods shrink to insignificance.

The presence of confounding events is likely to introduce noise into most analyses, but in this case the presence of contemporaneous listings appears to have introduced a bias. Though the sample of contemporaneous listings and other confounding events is small, it is instructive to evaluate the CERs for these data points, centering the analysis over the six announcements' listing dates. With the listing date as day 0, the average three day CER is 1.84 percent. Analyses of almost any type of event accompanied by simultaneous option listings during the 1975-1982 subperiod would yield positive returns. Therefore, failure to control for confounding events in the analysis is likely to have resulted in upwardly biased CERs.

What is the net economic effect of option announcements and listings together? Following the approach of Detemple and Jorion, 13 day listing period CERs are computed, but only for observations with verifiable announcement dates. This approach attempts to capture the full effect of option announcement and listing. As Table 2 shows, removal of confounding events occurring between days -6 and +7 decreases the CER in the 1975-1982 subperiod more than 2 percentage points. The overall option listing effect remains about 3 percent, which is statistically significant. The overall conclusion of Detemple and Jorion's analysis, that option listings have generally been wealth-increasing events, appears indisputable.

Nonetheless, this paper's finding of announcement period insignificance is not merely a statistical curiosity. First, the confirmation of Conrad's general findings suggest that it is inappropriate to dismiss the original explanation provided for her results (that the listing period price reaction arises as market makers and dealers build inventory in the underlying asset upon listing). Second, the observed price reaction for the full 13 day listing period (+2.95 percent) is far lower than the 4.76 percent found by Detemple and Jorion. Thus, the net economic gain from option listing appears to be more modest than was previously believed. Finally, the result adds to existing literature demonstrating how difficult it can be to interpret findings when the announcement under study occurs nearly contemporaneously with other events.

SUMMARY

Using a comprehensive sample from 1973 to 1986 this study reexamines the stock price impact of option introduction and finds listing period CERs that are directionally consistent with those reported by Conrad (1989) and Detemple and Jorion (1990). The results show the average net impact of option introduction to be about 3 percent, substantially lower than has been found previously. Extending the analysis to announcement period effects, significantly positive CERs are found for a 1975-1982 subperiod, a result consistent with earlier published work. The average excess return falls to zero, however, when observations with simultaneous, potentially confounding announcements are removed. Proximate option listing events appear to be driving what heretofore had been assumed to be an announcement effect. The implication of this research is that for option listing announcements (and perhaps for other types of events as well) it is imperative that observations with simultaneous, potentially confounding announcements be omitted. Failure to follow this practice can impart not only noise but bias to the results.

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