Valuation Implications of AMEX Listings: A Joint Test of the Liquidity-Signaling Hypothesis

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Abstract

This study examines the pattern of stock price behavior for a sample of 62 common stocks that moved from the NASDAQ system to the American Stock Exchange (AMEX) from 1982 to 1987. Using event study methodology, the study tests the joint liquidity-signaling hypothesis which states that a stock's prelisting liquidity and performance affect the market's response to news of AMEX listings. The results reveal significant differences between firms with low liquidity and low performance and those with high liquidity and high performance. Firms with low liquidity and past performance before listing appear to benefit from AMEX listings. Unlike prior studies, the results do not find anomalous market behavior during the postlisting period.

Introduction

Many studies examine the market behavior around the listing of common stocks on a national exchange (Bhandari, Grammatikos, Makhija, and Papaioannou, 1989; Fabozzi, 1981; Furst, 1970; Grammatikos and Papaioannou, 1986a and 1986b; McConnell and Sanger, 1987; Reints and Vandenberg, 1975; Sanger and McConnell, 1986; Van Horne, 1970; Ying, Lewellen, Schlarbaum, and Lease, 1977). The evidence shows abnormally positive returns during the interval between application and listing. Researchers often attribute this behavior to expectations of increased liquidity and to signaling effects. The evidence also shows that newly listed stocks underperform in the postlisting period. McConnell and Sanger (1987) examine several explanations for the abnormally negative postlisting common stock returns, but cannot provide a full explanation. Bhandari, Grammatikos, Makhija, and Papaioannou (1989) suggest that the postlisting anomaly is worse than earlier studies recognized.

Several studies separately examine the valuation implications of liquidity and signaling, but none jointly analyzes these factors. This study tests the joint liquidity-signaling hypothesis that a stock's prelisting liquidity and performance (a proxy for signaling) affect the market's response to news of AMEX listings. The study extends prior research, especially that of Grammatikos and

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Papaioannou (1986a, 1986b), by providing evidence about the effects of AMEX listings on shareholders' wealth.

Rationale and Literature Review

Liquidity

Amihud and Mendelson (1988) suggest that the liquidity-increasing motive may explain the reason some firms want to list on a national exchange, despite the costs and restrictions associated with such listings. Listing may enhance liquidity because of market differences between the NASDAQ system and the national exchanges. For example, a move from the NASDAQ system to an exchange involves a change in market regimes from a competitive, multiple market-maker system to a specialist system. According to Groth and Dubofsky (1987), market differences that affect liquidity include competition, distribution of risk, depth of market, access to information, and inventory adjustment. The differences in these five factors affect both the returns to providers of capital and the capital costs for firms. Listing may have value if the exchanges, on balance, provide greater liquidity than the NASDAQ system.

The evidence conflicts on whether listing enhances liquidity and, therefore, shareholders' wealth. Klemkosky and Conroy (1985) show that securities moving from the over-the-counter (OTC) market to the NYSE experience a significantly lower bid-ask spread and, thus, a reduced cost of liquidity to investors. These results confirm the findings of earlier studies by Hamilton (1976) and Hui and Heubel (1984). Marsh and Rock (1986) show that AMEX stocks have clearly superior liquidity compared with the NASDAQ National Market System (NMS). They attribute this difference to AMEX-listed stocks having smaller spreads than for comparably sized NMS stocks. Evidence by Hasbrouck and Schwartz (1986) also suggests that the exchange markets are more liquid than the NMS.

Yet Cooper, Groth, and Avera (1985) and Dubofsky and Groth (1984) show that the OTC market offers liquidity that is competitive with that offered by the national exchanges. Groth and Dubofsky (1987) conclude that the OTC dealer market, compared with the exchange specialist system, appears to create different degrees of liquidity for similar stocks when considering size and time factors.

Amihud and Mendelson (1988) say the tradeoff between the cost of listing and the increase in value can produce different results among firms. For example, OTC firms that already have high liquidity may realize little change in liquidity, but they must bear the associated costs. For other firms, the change in liquidity may be of significant value, but the increased costs may offset the benefits of listing.

Grammatikos and Papaioannou (1986a) examine the market reaction of a sample of 88 nonfinancial firms that moved from the OTC market to the NYSE between 1975 and 1981. They reduce their sample over one-half by dropping companies with other firm-specific news releases around listings. Grammatikos and Papaioannou hypothesize that investors expect liquidity gains for the less liquid OTC stocks, but not for their more liquid counterparts after listing on the NYSE. They find that stocks with low liquidity (as measured by the bid-ask spread) on the OTC exhibit a positive reaction. Stocks with high liquidity show a nonpositive market reaction around the announcement of the listing application. Beside the week before application, other critical periods for significant market reaction are the week after approval and the postlisting period.

Signaling

Listing may contain informational content that influences the market's evaluation of a stock. Ying, Lewellen, Schlarbaum, and Lease (1977) suggest that listing serves as an expression of management's confidence in the future prospects of the firm. That is, some market participants may perceive exchange listing as a seal of approval that has positive value. To be valid, a signal must convey information not provided by other sources and must have enough costs to prevent dishonest signals. Firms are unlikely to use listing as a mechanism for generating false signals because of the costs associated with listing.

Grammatikos and Papaioannou (1986b) say listing has informational value because the independent evaluation and approval by an exchange may signal management's confidence in the firm. A rational management would not pursue listing unless it felt confident that the firm could satisfy the financial standards in the future. The formal application to an exchange confirms management's confidence that the firm has matured enough to uphold the on-going financial standards for listing.

Grammatikos and Papaioannou (1986b) contend that the signaling value of listing may differ among firms. They attribute the price gains accompanying listing announcements to positive signaling value, but only for firms with low or volatile earnings performance before listing. Using the market model, they examine a sample of nonfinancial firms that traded on the OTC market and moved to the NYSE between 1975 and 1981. Their results show a differential market reaction between stocks with low and high informational value as measured by the growth rate of earnings per share (EPS) before listing. Stocks for which listing has high informational value (i.e., those with low earnings performance) exhibit a significant, positive price reaction during the prelisting period, but a negative price reaction during the postlisting period. Stocks for

which listing has low informational value (i.e., those with high earnings performance) do not exhibit any significant market reaction.

There is reason to question whether the informational value (signaling) hypothesis presented by Grammatikos and Papaioannou (1986b) for stocks moving from the OTC market to the NYSE also applies to stocks moving from the NASDAQ system to the AMEX. The initial and continued listing requirements are much more difficult on the NYSE versus the AMEX. The qualification standards on the NMS equal or exceed the AMEX standards in every area. Yet the financial standards for inclusion on the NASDAQ are less stringent than those for listing on the AMEX. Therefore, the signaling effects may be greater for stocks moving from the NASDAQ system to the NYSE versus the AMEX.

Research Question and Hypotheses

Testing the joint liquidity-signaling hypothesis involves separating the sample into four groups depending on the stock's prelisting liquidity and performance. Stocks are classified as having low or high liquidity based on their average bid-ask spread adjusted for price during the prelisting period (see Equation 8). A performance index is used to classify stocks as having high signaling (low past performance) or low signalling (high past performance). As equation 9 shows, the performance index is the reciprocal of the coefficient of variation of the growth rate of the firm's quarterly earnings per share during the three years before listing. The following chart shows the valuation implications of these groups during prelisting.

Groups

	High Signaling (Low Performance)	***Low Signaling*** (High Performance)
Low Liquidity	**Group 1** Listing has a positive effect on value	**Group 2** Listing has an uncertain effect on value
High Liquidity	**Group 3** Listing has an uncertain effect on value	**Group 4** Listing has no effect on value

The primary research question tested is: What is the market behavior around announcements of AMEX listings of common stocks with different combinations of liquidity and signaling (past performance)? Common stocks in group 1 (low liquidity and low performance) are expected to have abnormally positive returns immediately around announcements of AMEX listings. Stocks in group 1 have the most potential to experience gains by listing. Stocks in group 4 (high liquidity and high performance) have the least to gain by listing because their liquidity and performance are already strong. Thus, significant abnormal returns around announcements of AMEX listings listing are not expected for the stocks in group 4. The value implications for stocks in groups 2 and 3 are uncertain because the expected gains from improved liquidity (group 2) or positive signaling (group 3) may not offset the costs of listing.

Sample and Methodology

To determine whether the joint hypothesis operates for newly listed AMEX firms, stock return behavior is examined around announcement dates associated with listing. These critical event dates are the day the AMEX announces a firm's formal application for listing (application date), the day the AMEX announces approval of a firm's application (approval announcement), and the day of listing on the AMEX. The AMEX announces these dates in the *AMEX Weekly Bulletin*, which it publishes on Fridays.

Sample

The initial sample includes all 384 AMEX listings from 1982 to 1987. Stocks of financial companies are dropped to improve comparability with research by Grammatikos and Papaioannou (1986a, 1986b). Companies that listed their common stock on the AMEX with their initial public offerings also are excluded. This step reduces the noise associated with other significant news. These two steps decrease the sample from 384 to 196 companies. Stocks for which the *AMEX Weekly Bulletin* does not report the three critical event days associated with listing are dropped. Thus, the sample declines to 118 companies. Finally, stocks with not enough data are eliminated, which reduces the sample to 62. Specifically, thinly traded stocks and those lacking data for twelve quarters of EPS before the formal application date were cut.

To account for other firm-specific information, the *Wall Street Journal Index* was checked for new items from one week before the application announcement to one week after each listing. Most of the news items are dividend and earnings announcements. Dropping firms with other news releases reduces the sample to

only 27 stocks. In this study, the larger sample of 62 companies was used to test the joint hypothesis because of the random distribution of other news around the three critical event dates. The analyses of the separate liquidity and signaling effects after dropping other firm-specific news are available from the authors.

Methodology

The market model is used to estimate the abnormal response associated with news of AMEX listings. Brown and Warner (1980, 1985) find this method to be appropriate for event studies using weekly (daily) stock return data. Separate event analyses are not conducted for the NASDAQ and NMS segments of the sample because most of the 62 stocks are NMS stocks.

A potential problem of estimating betas from daily returns is a bias resulting from nonsynchronous trading. Although there are more complicated procedures for estimating market model parameters to reduce the bias in the estimated beta, this research handles this problem by dropping thinly traded stocks from the sample.

Dropping thinly traded stocks also lessens the problem of size effects associated with return behavior and liquidity. Compared with the firm used in the final sample, these thinly traded stocks are smaller capitalization firms with larger bid-ask spreads. Roll (1984) finds a negative relationship between firm size and bid-ask spread. Amihud and Mendelson (1986) report that asset returns are an increasing function of the spread. Thus, the current test sample contains larger, more actively traded and liquid stocks.

Abnormal stock returns are generated by first computing daily returns for each security j using the market model

$$(1)\ R_{jt} = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt} \quad t = -200 \text{ to } -51$$

where:

R_{jt} = the return for security j on day t;

R_{mt} = the return on the NASDAQ index on day t;

α_j, β_j = the parameters of the market model; and

ε_{jt} = the unsystematic part of security j's return on day t.

Estimates of the market model parameters are derived using security j's observed daily return on day t and the NASDAQ index m on day t. Prices are

based on the average bid and ask price during the period in which the stock traded on the NASDAQ system.[1] Returns are adjusted for cash dividends, stock dividends, and splits. Parameters of the market model are estimated using 149 trading days for each stock from day -200 through -51 before the listing date. This model is used to estimate both pre- and postlisting abnormal returns in the period from trading day -50 through +50.

Abnormal returns (AR_{jt}) are calculated as

$$(2)\ AR_{jt} = R_{jt} - (\hat{\alpha}_j + (\hat{\beta}_j R_{mt}))$$

Average abnormal returns (AAR_j) from test day T_{1j} through test day T_{2j} are calculated as

$$(3)\ AAR_j = \sum_{t=T_{1j}}^{T_{2j}} AR_{jt}/(T_{2j} - T_{1j} + 1)$$

The abnormal returns are averaged because some intervals differ across firms. The average (portfolio) daily abnormal return for the sample of N securities during an event interval is

$$(4)\ \overline{AAR} = \sum_{j=1}^{N} AAR_j/N$$

The final part of the methodology involves testing the abnormal returns for significance. Each abnormal return, AR_{jt}, is standardized by the standard deviation of its forecast error

$$(5)\ SAR_{jt} = AR_{jt}/S_{jt}$$

where

S_{jt} = standard deviation of the forecast error.

[1] Several studies suggest that some observed market anomalies may be caused by using daily returns without adjusting for the effects of bid-ask spreads. For example, Blume and Stambaugh (1983) argue that the use of the bid-ask spread results in upward biased returns.

For each test interval $T_{1j} \ldots T_{2j}$, the standardized daily abnormal returns are summed to make a standardized cumulative abnormal return

$$(6)\ SCAR_j = \sum_{t = T_{1j}}^{T_{2j}} SAR_{jt}/(T_{2j} - T_{1j} + 1)^{1/2}$$

Finally, a Z statistic for a sample of N securities is derived using the formula

$$(7)\ Z = \sum_{j = 1}^{N} SCAR_j/N^{1/2}$$

For the prelisting period, a one-tailed test is used for group 1 because it is hypothesized that a positive market reaction to news of AMEX listings. Two-tailed tests are used for groups 2, 3, and 4 during the prelisting period and for all groups during the postlisting period. The direction of the market response to AMEX listings for such periods is not predicted.

Liquidity is defined as the bid-ask spread for each security while it traded on the NASDAQ system.[2] The bid-ask spread represents the price that market makers charge for liquidity services. A reduction in the bid-ask spread may increase the liquidity of a firm's stock. In turn, this may reduce the required rate of return and increase a stock's value. The spread varies directly with the price. Thus, the spread is divided by the average of the bid and ask prices to get the average percent spread (S). The average percent spread over the estimation period, which is from -200 to -51 days before the application, is calculated as

$$(8)\ S = 1/150 \sum_{t = -51}^{-200} (PA_t - PB_t)/((PA_t + PB_t)/2)$$

where:

[2]Groth and Dubofsky (1987) note that the bid-ask spread is only one dimension of liquidity. This measure does not account for the number of shares that can be traded at the quoted bid-ask price. They contend that liquidity measures should account for both trading volume and concurrent price changes. Marsh and Rock (1986) propose measuring liquidity without respect to volume. They show that, on average, trade-to-trade movements in the prices of stocks on both the AMEX and the NASDAQ/NMS are unrelated to transaction volumes, except the few largest issues.

PA_t = ask price; and
PB_t = bid price.

The proxy used to measure signaling is the performance index, PI, developed by Grammatikos and Papaioannou (1986b). This measure is the reciprocal of the coefficient of variation for the growth rate of a firm's quarterly earnings per share.

(9) $PI = \bar{E} / \sigma$

where:

$\bar{E}$ = mean percentage growth in a four quarter cumulative total of EPS; and
σ = standard deviation of the EPS growth.

The term $\bar{E}$ is based on the twelve quarters of EPS, adjusted for stock dividends and stock splits, reported before the listing date. Using a cumulative total avoids seasonalities.

Cumulative average residuals (CARs) are calculated from day -50 through +50 around the three event dates. Differences in abnormal returns between groups 1 and 4 and groups 2 and 3 are tested for significance using a two-sample t-statistic. A one-tailed test is used for groups 1 and 4 because the CARs in group 1 are expected to exceed those of group 4. A two-tailed test is used to test for difference between groups 2 and 3 because direction is not predicted.

Empirical Results

Testing the joint hypothesis requires splitting the sample of 62 stocks into four groups. After ranking the stocks in increasing order of spread, the median average spread is used to split the sample into 31 low and 31 high liquidity stocks. The stocks also were ranked by their performance index divided into 31 low and 31 high performers, using the median as the dividing mark.

Group 1 is formed by determining how many stocks in the low liquidity group also have low performance (high signaling) before listing. Group 1 has 17 stocks. A similar procedure is followed to form the remaining groups. Group 2 contains 14 stocks with low liquidity, but high performance (low signaling). Group 3 has 18 stocks with high liquidity, but low performance (high signaling). Group 4 has 13 stocks with high liquidity and high performance (low signaling). Groups 1 and 4 are called an *extreme group* and groups 2 and 3 a *mixed group.*

Table 1 shows the distribution of bid-ask spreads for the sample of 62 stocks between the extreme and mixed groups. The average spread of the most liquid stocks is less than two percent and more than eight percent for the least liquid firms. The bid-ask spreads are slightly narrower for the stocks in the mixed group versus the extreme group.

Table 2 shows the frequency distribution of the performance index data for the sample of 62 stocks between the extreme and mixed groups. These distributions are similar between the two groups.

Because the *AMEX Weekly Bulletin* publishes listing announcements on Fridays, the information could leak earlier or be delayed in reaching investors because of the mailing time. Thus, the effects are measured daily over weekly periods around each announcement. Daily abnormal returns also are examined, but space limitations prevent showing these results.

Table 3 summarizes the findings of the event analyses for the three event days and for one week before and after each of these days. Panel A of Table 3 shows the results for group 1, low liquidity and low performance. The signs of the abnormal returns are all positive as predicted. The results reveal a significantly positive abnormal return at the .05 level on the approval announcement date (+1.601 percent) and during the week before listing (+.907 percent per day). These results support the joint hypothesis for group 1.

Panel B of Table 3 gives the results for groups 4, high liquidity and high performance. The only period of significant abnormal returns at the .05 level is on the listing date (+2.405 percent). Contrary to the prediction, the market responds positively on the listing date.

Panel C of Table 3 presents the results for group 2, low liquidity and high performance. There are no significant abnormal returns on the application, approval, or listing days or during the week before and after these dates. On average, the market is not responsive to listing announcements for stocks in group 2.

Panel D of Table 4 gives the results for group 3, high liquidity and low performance. The results show significant average daily abnormal returns at the .05 level during the week before listing (+.975 percent) and at the .01 level on the listing date (-2.181 percent). The rationale is unclear for a positive average daily abnormal return during the week before listing, but a negative abnormal return on the listing date.

In theory, the application announcement should be the single most important event because the AMEX rarely rejects a formal application. Sanger and McConnell (1986) note that the presence of abnormal returns after the application announcement is incompatible with capital market efficiency, unless some uncertainty about the outcome of the event remains after that date. Thus, the significant market responses on the approval date for group 1, on the listing

date for groups 3 and 4, and during the week before listing for groups 1 and 3 are puzzling.

In support of these findings, other studies also find significant returns after the application announcement. For example, Ying, Lewellen, Schlarbaum, and Lease (1977) report sizeable positive abnormal returns during the month immediately after the application date. Fabozzi (1981) finds a significant positive reaction in the week of AMEX approval. Grammatikos and Papaioannou (1986a) attribute the reaction in the approval week to the differential time delay in the exchange's approval of the application.

Such market behavior may be unrelated to the listing action. Ying, Lewellen, Schlarbaum, and Lease (1977) argue that the continued emergence of progressively more favorable news items about the firms involved may explain the market behavior after a listing application. Grammatikos and Papaioannou (1986b) delete stocks with other announcements concurrent to the listing news from their sample. They still find a significant positive market reaction between the application to approval period for their sample of low performance stocks.

Table 4 shows the results of two-sample t-tests between the average abnormal returns of the extreme group (groups 1 and 4) and the mixed group (groups 2 and 3) during the prelisting period. Group 1's returns are hypothesized to be significantly larger than those of group 4, but no significant differences between groups 2 and 3 are expected.

Panel A of Table 4 shows significantly positive differences at the .05 level between the returns of group 1 and group 4 one week before the application date, on the approval date, and one week before the listing date. This evidence supports the belief that the market responds differently around certain listing announcements to firms with extreme differences in liquidity and past performance. Panel B of Table 4 shows no significant differences between the average abnormal returns of groups 2 and 3.

Table 5 shows the average weekly returns for the ten weeks after listing for each group. The only significant abnormal return is negative and occurs during the fourth week for group 4 (high liquidity and high performance). This finding could be simply random, because there is no obvious reason for this result.

The postlisting results do not support the anomalous pattern of negative postlisting returns found in previous studies (Fabozzi, 1981; Grammatikos and Papaioannou, 1986a and 1986b; McConnell and Sanger, 1987; Sanger and McConnell, 1986; Van Horne, 1970; Ying, Lewellen, Schlarbaum, and Lease, 1977). One explanation for the current findings involves the reduction of market frictions that prevent investors from arbitraging away the predictable negative postlisting price behavior. Yet, Bhandari *et al.* (1983) show that the postlisting anomaly is still present until 1984.

Cumulative average residuals (CARs) are computed for ±50 trading days around the application, approval, and listing dates for each group. The approval date is used to illustrate the pattern of CARs because the results are similar around all event dates. Further, the approval date approximates the midpoint between the application announcement and listing dates. The CARs surrounding the other event dates are available from the authors.

Figure 1 presents the CARs for ±50 trading days around the approval announcement date for the extreme group. This graph shows some differences between the CARs of group 1 (low liquidity and low performance) and group 4 (high liquidity and high performance). For example, the CARs of group 1 are positive after the approval announcement, slope upward, and exceed those of group 4 for the entire 101 days. The CARs of group 4 are more erratic and show increases from days -6 to +18 around the approval announcement date, but then drift downward. Most of the CARs of group 4 are negative.

Using two sample t-tests at the .05 level of significance, the CARs of group 1 are statistically greater than those of group 4 for 82 of the 101 days. These results reinforce the claim that market behavior differs significantly between groups 1 and 4 around the approval announcement date.

Figure 2 presents the CARs for ±50 trading days around the approval announcement date for the mixed group. The CARs of group 2 (low liquidity and high performance) and group 3 (high liquidity and low performance) are mostly negative and slope downward. The CARs of group 3 exceed those of group 4 on all but 12 of the 101 days.

Using two sample t-tests, the CARs of groups 2 and 3 differ at the .05 level on 35 of the 101 days. These results also show fewer significant differences between the CARs of the mixed group than the extreme group over the test period.

The methodology of splitting the 62 stocks in four groups does not show whether it is liquidity or signaling or both that mostly drives the market reaction to AMEX listings. Therefore, separate event analyses are conducted for low versus high liquidity stocks and low versus high signaling stocks. Space limitations prevent showing the complete findings.

During the prelisting period, the results show that both liquidity and signaling affect the market reaction to news of AMEX listings. This evidence confirms the prelisting findings of Grammatikos and Papaioannou (1986a, 1986b) for stocks listing on the NYSE. During the postlisting period, the results for the high and low liquidity groups provide little support for the anomalous pattern of negative postlisting returns found in most previous studies. The findings provide no evidence of significant abnormal returns during the ten week postlisting period for either low or high performance stocks.

Conclusions

This study examines the market behavior for a sample of 62 common stocks that moved from the NASDAQ system to the AMEX between 1982 and 1987. The current research uses event study methodology to test the joint liquidity-signaling hypothesis. This hypothesis states that a stock's liquidity and performance before listing affect the market's response to news of AMEX listings.

The evidence provides some support for this hypothesis. For example, the market response to news of AMEX listings differs significantly between stocks with low liquidity and low performance and those with high liquidity and high performance before listing. The evidence does not support the anomalous postlisting market behavior shown in earlier studies. The current research reinforces the prelisting findings of other studies, especially those of Grammatikos and Papaioannou (1986a, 1986b). Yet, the postlisting results differ markedly from past research.

Interpreting these results requires care. For example, the sample size is small. Therefore, the results cannot be generalized to all AMEX listings. Other factors also may have valuation implications for exchange listing beside liquidity and signaling.

Considering these caveats, the results suggest a firm's prelisting liquidity and performance affect the market's response to news of AMEX listings. For example, firms with a low bid-ask spread (low liquidity) and low performance before listing, on average, realize abnormal gains by listing. Such firms incur additional costs by listing. Thus, firms should consider carefully the circumstances under which listing might yield favorable results.

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Table 1
Frequency Distribution of Average Bid-Ask Spreads

Average Spread	Number of Firms: Extreme Group (Groups 1 and 4)	Number of Firms: Mixed Group (Groups 2 and 3)
$S \geq 8\%$	5	4
$7\% \leq S < 8\%$	1	1
$6\% \leq S < 7\%$	2	2
$5\% \leq S < 6\%$	8	3
$4\% \leq S < 5\%$	7	8
$3\% \leq S < 4\%$	4	7
$2\% \leq S < 3\%$	3	5
$S < 2\%$	0	2
Total	30	32

Table 2
Frequency Distribution of the Performance Index

Performance Index	Number of Firms: Extreme Group (Groups 1 and 4)	Number of Firms: Mixed Group (Groups 2 and 3)
$PI \geq 2.0$	1	0
$1.0 \leq PI < 2.0$	2	0
$.9 \leq PI < 1.0$	0	1
$.8 \leq PI < .9$	1	0
$.7 \leq PI < .8$	1	4
$.6 \leq PI < .7$	1	1
$.5 \leq PI < .6$	2	2
$.4 \leq PI < .5$	4	5
$.3 \leq PI < .4$	3	4
$.2 \leq PI < .3$	3	5
$.1 \leq PI < .2$	3	3
$0 \leq PI < .1$	1	0
$PI < 0$	8	7
Total	30	32

Table 3
Abnormal Stock Returns for the Extreme and Mixed Groups:
Pre-Listing Results

Test Interval	Average Daily Abnormal Return %	Z Value	Percent Positive Returns
	Extreme Group		
	Panel A		
	Group 1 Low Liquidity and Low Performance (High Signaling)		
One week before application	.188	.631	52.9
Application announcement	.998	1.468	70.6
One week after application	.254	.615	55.3
One week before approval	.481	1.264	50.6
Approval announcement	1.601	2.527[a]	58.8
One week after approval	.085	.085	60.6
One week before listing	.907	1.976[a]	51.3
Listing date	.209	.274	31.3
One week after listing	.045	.148	38.8
	Panel B		
	Group 4 High Liquidity and High Performance (Low Signaling)		
One week before application	-.720	-1.368	33.8
Application announcement	-.655	-.674	46.2
One week after application	.420	.875	56.9
One week before approval	.425	.992	53.8
Approval date	-.404	-.637	23.1
One week after approval	.741	1.107	50.0
One week before listing	-.265	-.436	38.3
Listing date	2.405	2.978[b]	54.5
One week after listing	.530	1.085	53.8

Table 3 (continued)
Abnormal Stock Returns for the Extreme and Mixed Groups:
Pre-Listing Results

Test Interval	Average Daily Abnormal Return %	Z Value	Percent Positive Returns
	Mixed Group		
	Panel C		
	Group 2 Low Liquidity and High Performance (Low Signaling)		
One week before application	-.345	-.470	34.3
Application announcement	-1.379	-1.930	21.4
One week after application	-.228	-.127	38.2
One week before approval	.299	.478	43.5
Approval date	1.552	1.951	50.0
One week after approval	-.350	-.650	33.3
One week before listing	.429	.944	38.5
Listing date	.598	.588	38.5
One week after listing	-.415	-.949	32.9
	Panel D		
	Group 3 High Liquidity and Low Performance (High Signaling)		
One week before application	-.110	-.300	45.6
Application announcement	-.012	.032	38.9
One week after application	.280	.720	42.4
One week before approval	.096	.114	46.1
Approval announcement	-.856	1.184	41.2
One week after approval	-.020	.036	46.8
One week before listing	.975	2.364[b]	51.3
Listing date	-2.181	-3.029[c]	26.7
One week after listing	-.267	-.582	44.8

a = significant at the .05 level using a one-tailed test
b = significant at the .05 level using a two-tailed test
c = significant at the .01 level using a two-tailed test

Table 4
Two Sample t-Test of Average Abnormal Returns for the Extreme and Mixed Groups: Pre-Listing Results

Test Interval	t-Statistic	Degrees of Freedom
Panel A		
Group 1 Low Liquidity and Low Performance Versus Group 4 High Liquidity and High Performance		
One week before application	1.712[a]	141
Application announcement	1.318	22
One week after application	-.333	144
One week before approval	.116	115
Approval announcement	1.927[a]	27
One week after approval	-.930	75
One week before listing	2.211[a]	134
Listing date	-.940	15
One week after listing	-.863	108
Panel B		
Group 2 Low Liquidity and High Performance Versus Group 3 High Liquidity and Low Performance		
One week before application	-.447	140
Application announcement	-1.475	29
One week after application	-.861	146
One week before approval	.310	146
Approval announcement	1.258	24
One week after approval	-.624	132
One week before listing	-1.007	143
Listing date	1.782	25
One week after listing	-.207	139

a = significant at the .05 level using a one-tailed test.

Table 5
Abnormal Stock Returns for the Extreme and Mixed Groups:
Post-Listing - Weekly Results

Test Interval	Average Daily Abnormal Return Percent	Z Value	Percent Positive Returns
Extreme Group			
	Panel A		
	Group 1 Low Liquidity and Low Performance (High Signaling)		
Weeks after listing			
1	.045	.148	38.8
2	-.139	-.317	37.6
3	.607	1.296	45.9
4	.489	1.083	46.1
5	-.198	-.428	38.8
6	-.176	-.483	42.2
7	.426	.801	51.8
8	.348	.694	44.7
9	-.146	-.322	42.4
10	-.330	-.706	38.8
	Panel B		
	Group 4 High Liquidity and High Performance (Low Signaling)		
Weeks after listing			
1	.530	1.085	53.8
2	.476	.870	49.2
3	.013	-.012	42.9
4	-1.176	-2.192[a]	28.9
5	-.551	-.832	30.8
6	.101	.271	36.9
7	.245	.496	46.2
8	.970	-1.735	32.3
9	.254	.497	50.8
10	.487	-.852	30.8

Table 5 (continued)
Abnormal Stock Returns for the Extreme and Mixed Groups:
Post-Listing - Weekly Results

Test Interval	Average Daily Abnormal Return Percent	Z Value	Percent Positive Returns
Mixed Group			
	Panel C		
	Group 2 Low Liquidity and High Performance (Low Signaling)		
Weeks after listing			
1	-.415	-.949	32.9
2	.053	-.070	44.3
3	-.554	-.847	35.7
4	-.294	-.562	40.2
5	-.895	-1.725	35.7
6	.026	.192	50.0
7	.279	.588	45.7
8	.324	.579	45.7
9	.112	.006	45.7
10	.437	.670	44.1
	Panel D		
	Group 3 High Liquidity and Low Performance (High Signaling)		
Weeks after listing			
1	-.267	-.582	44.8
2	.417	.741	52.2
3	-.567	-1.230	36.7
4	-.160	-.368	42.6
5	-.083	-.157	45.6
6	.150	.279	50.0
7	.051	.067	42.7
8	-.759	-1.608	35.6
9	.123	.197	45.6
10	-.047	-.129	48.9

a = significant at the .05 level using a two-tailed test

Figure 1
Cumulative Average Residuals
Approval Day: Extreme Groups

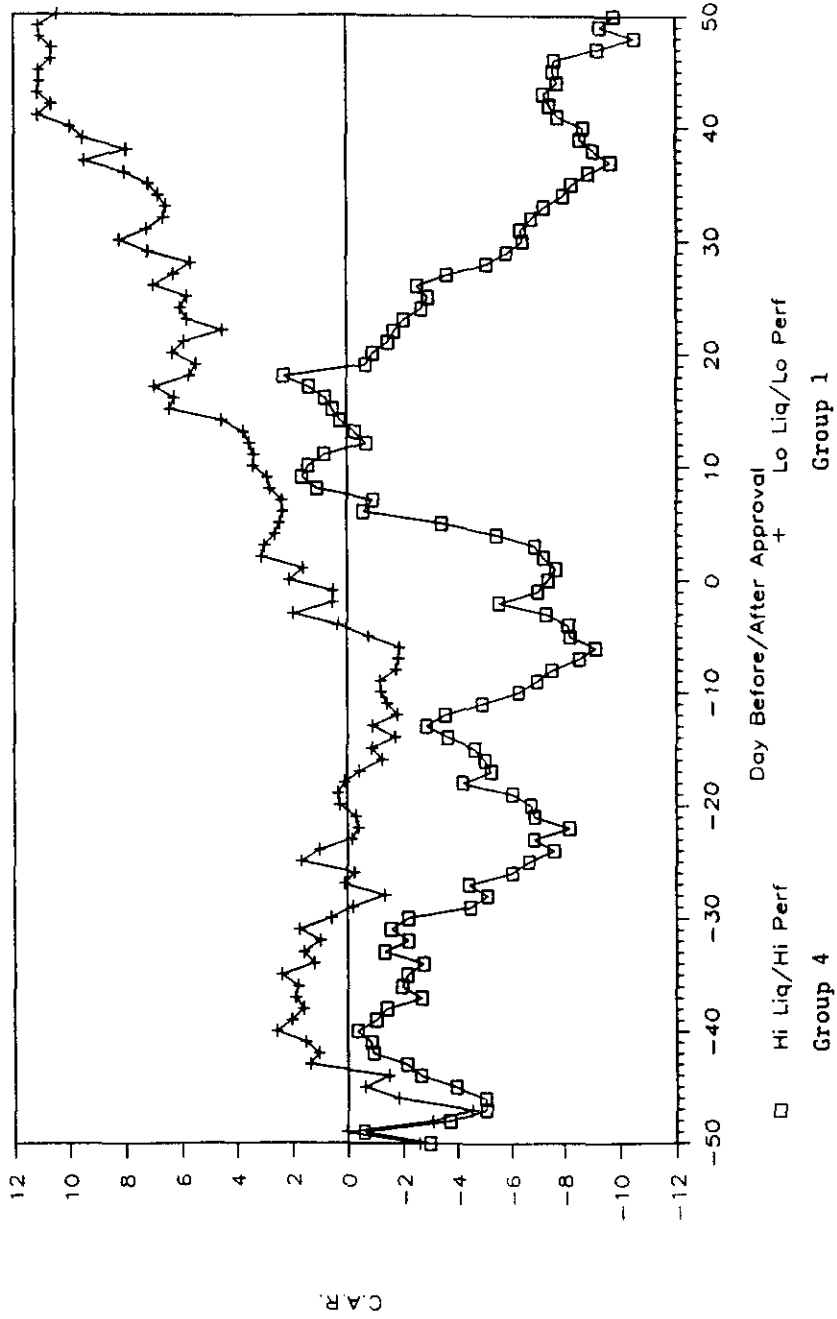

Figure 2
Cumulative Average Residuals
Approval Day: Mixed Groups