New Evidence on the Wealth Effects from Listing on the London Stock Exchange for U.S. Shareholders

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ABSTRACT

In this study, the impact from listing on the London Stock Exchange to the firm value of U.S. companies is found to be significantly negative. This study adjusts the methods used by Lee (1991) to those used by Howe and Kelm (1987) to compare results with the same methods. Although the results for the same event day intervals remain similar, the results for the entire period and especially the post-listing period are significantly different. The main implication is that managers should avoid international listings of their firms’ stock because it can cause significant wealth loss to the owners of the firm.

Keywords: Event Study, Cross-listing, London Stock Exchange

INTRODUCTION

The international cross-listing of a firm’s stock has drawn considerable interest, as seen by the works pre-1993 in Appendix 1. The pathfinder in this course of research is the work of Howe and Kelm (1987). In the over 30 years since their study, a search in Google Scholar finds 142 articles citing this reference. It has stood the test of time as it has been cited 36 times in the past 10 years, with 3 of these references as recent as 2017: Ho, Addae-Dapash and Peck, 2017; Jia, 2017; and Aksoy and Dayi, 2017. While all these studies refer to Howe and Kelm (1987), none of their tests is based on the same model parameters as theirs is. Different from subsequent research, we use the same Howe and Kelm model on the largest international market, the London Stock Exchange (LSE), to compare their findings directly. The first research to study the impact on U.S. firms from their cross-listing of their stock on the London Stock Exchange is that of Insup Lee (1991). Lee's (1991) examination of the impact on U.S. firms' common stock prices from listing on the London Stock Exchange concludes that there is no significant stock reaction associated with the event. Lee's conclusions are summarized as follows: i) there is no significant liquidity gain to a U.S. firm's stock price from listing on the London Stock Exchange; ii) the lack of a significant impact from listing on a foreign exchange such as the London Stock Exchange is a contradiction to the significant negative reactions found by Howe and Kelm (H-K, 1987) for U.S. companies cross-listing on other European stock exchanges; and iii) there is no permanent, long-term change in these firms' return characteristics. This study examines the work of Lee and finds that these conclusions on the cross-listing of U.S. companies on the London Stock Exchange are sensitive to the event method employed and the time period covered in the study. When the event study method of Howe and Kelm (1987) is used on the sample of U.S. companies cross-listing on the London Stock Exchange during the time period of Lee's study, the results and conclusions are similar to those of H-K, rather than to those of Lee. The findings in this current research are the following: i) listing on the London Stock Exchange results in huge, negative, and statistically significant abnormal returns; ii) these results are similar to those found by Howe and Kelm (1987); and iii) these large, negative, and significantly abnormal returns persist for at least two years after the U.S. companies cross-list on the London Stock Exchange.
Exchange. In addition, several researchers have studied the impact on firm value from U.S. companies cross-listing their stock on the LSE with mixed results, as reported in Appendix 1. McGoun (1987) finds negative post-listing returns. Varela and Lee (1993) also find a statistically significant negative alpha term for firms listing on the LSE. Lee (1991) finds negative, but insignificant abnormal returns from LSE cross-listing. Damodaran, Crocker, and Van Harlow (1993) also find no evidence of a positive listing effect on returns. On the other hand, Jayaraman, Shastri, and Tandon (1993) find positive significant abnormal returns on the LSE listing day. All these studies use different event study models and different sample periods. It is no surprise that different models and different time periods would lead to different results! The same is true in more recent studies. Thus, in this study we use the original H-K model and time period for our tests.

The reasons for companies to list their stock on international stock exchanges are well summarized by Lee (1991) and Howe and Kelm (1987). (See Sandagaran, 1988.) The essential theory is that the cross-listing of a company on an international exchange will maximize shareholder wealth. This result can be due to many hypotheses: an increased demand for the firm's stock (liquidity/marketability gains); easier access to international sources of financing (capital market integration); and improvement of the image of the company to compete in international markets. There also may be some additional costs to firms that list on international exchanges (e.g., regulatory requirements such as meeting and maintenance costs of listing and the uncertainty of future changes in regulations). However, all of these arguments support the theory that firms would list on international exchanges if the benefits outweigh the costs. Management would only decide to list on an international exchange if such action has a positive net present value.

Research examining stock price reactions to international stock exchange listings has grown substantially since Lee's (1991) investigation. The study by Howe and Kelm (1987) stands out as the only major research of the impact on firm value of cross-listings on international stock exchanges by U.S. firms before Lee's research. Howe and Kelm (1987) examine the abnormal returns of U.S. companies on their listing date on three foreign stock exchanges: Basel, Switzerland; Frankfurt, Germany; and Paris, France. They find that U.S. companies cross-listing on the Frankfurt and Basel Stock Exchanges experienced statistically significant negative cumulative abnormal returns after the listing date. The impact to Paris Stock Exchange listing was negative, but not statistically significantly different than zero. Howe and Kelm concluded that overseas listings for U.S. companies generally result in losses for their shareholders. Eiteman, Stonehill, and Moffett in their Multinational Business Finance textbook made the following comment when they presented the results of the Howe and Kelm study."An obvious omission is London."

Two important reasons for studying the London Stock Exchange (LSE) are detailed by Lee (1991): i) the London Stock Exchange has listed more U.S. companies than any other international exchange; and ii) the London Stock Exchange is one of the largest stock exchanges in the world in terms of total market value of issues listed. An additional reason (of perhaps greater importance) is that the London Stock Exchange has long established its reputation as the number one exchange in the world in terms of international listings; i.e., the number of foreign issues listed, the total market value of foreign issues listed, or the volume of trading in foreign issues.

Specifically, Lee (1991) examines whether the Howe and Kelm (1987) findings for the Basel, Frankfurt, and Paris Stock Exchanges could be supported by the wealth effects for U.S. companies cross-listing on the London and Toronto Stock exchanges. LLee finds that U.S. firms listing on the London Stock Exchange experienced no significant stock price reaction. Unfortunately, Lee's conclusions are not directly comparable to those of Howe and Kelm because his study uses a different experimental design.
When listing on the London Stock Exchange is reexamined using the methodology of Howe and KelM in this paper, the results indicate significant, negative abnormal returns for the same event periods. These results support the conclusion of Howe and KelM that U.S. managers should avoid overseas listings. Furthermore, Lee's conclusion "that overseas listings do not cause significant or permanent change in shareholders' wealth" (1991, p. 591) is contradicted by the negative and statistically significant abnormal returns that persist for at least two years after U.S. companies cross-listing on the London Stock Exchange.

The next section describes the similarity of the data used in this study to that used by Lee. The subsequent section shows the differences between the Lee method and the Howe and KelM method. The following section contrasts the results of listing on the London Stock Exchange using the Howe and KelM method to that of Lee. The results are compared to those of Howe and KelM, and the similarities and differences are discussed. The following section tests for the long-term impact of LSE listing and finds that it persists for two years. The final section discusses the conclusions and implications of the study.

SAMPLE SELECTION

The sample of firms used in this study is drawn from the set of U.S. companies that listed on the London Stock Exchange in the years 1962 through 1986. The names of the companies and the dates when the companies were admitted to the London Stock Exchange (i.e., the date when trading in the company's stock began on the LSE) are taken from the London Stock Exchange Quarterly (1986). This source is the same one used by Lee (1991). Lee imposed three criteria on the sample:

2. The firms are classified in non-regulated industries.
3. There had to be no significant firm events within sixty days prior to the firm's actual listing on the LSE.

Lee (1991) then used those firms with the above criteria, which were contained in the Center for Research on Security Prices (CRSP) Daily Excess Returns file. Lee's final sample contained 119 companies.

In order to directly compare the results of this current study to those of Howe and KelM (1987), Lee's three criteria are followed and two additional restrictions are imposed on the data:

1. The U.S. firms must have their stock returns in the Center for Research on Security Prices (CRSP) Daily Stock Returns file (not the CRSP Excess Returns), as used by Howe and KelM.
2. There is no missing data for 90 days before the listing date and for 40 days after the listing date, as Howe and KelM specified.

These two conditions are imposed by Howe and KelM (1987) and they calculate the excess returns. Their excess return calculations are repeated here. In this study, the final sample contains 121 firms listing on the London Stock Exchange, as compared to Lee's sample of 119. The construction of the samples is very similar. The major difference between this study's sample and Lee's sample is the difference in the databases used. Lee used the CRSP Daily Excess Returns file, while this study uses the same data source as Howe and KelM—the CRSP Daily Returns file. The different formulas for the calculation of the abnormal returns of the Lee method versus the Howe and KelM method (which is used in this study) are described in the next section.
EVENT STUDY METHODS

The Howe-KeIm study (1987) employed a market model event study method. They used the following equation to estimate abnormal returns (1987, p. 53):

$$R_{jt} = a_j + b_j R_{mt} + e_{jt}$$

(1)

where

- $R_{jt}$ = the return on security $j$ for period $t$,
- $a_j$ = the intercept term,
- $b_j$ = the covariance of the returns on the $j$th security with those of the market portfolio, divided by the variance of the market portfolio's returns,
- $R_{mt}$ = the return on the CRSP equally-weighted market portfolio for period $t$, and
- $e_{jt}$ = the residual error term on security $j$ for period $t$.

The parameters of the market model were estimated during a 100-day control period that began 190 days before the listing data and ended 91 days before the listing date. The listing date is the event date (Day 0). The market model parameters from the estimation period are used to estimate the expected return for each day of the event period. The event period starts 90 days (Day 90) before the listing date and goes to 40 days (Day 40) after listing.

The abnormal return ($ABR_{jt}$) is the difference between the actual return and the expected return. It is calculated by subtracting the expected return (which uses the parameters of the firm from the estimation period and the actual market return for a particular date in the event period) from the actual firm return ($R_{jt}$) on that date. The equation is as follows:

$$ABR_{jt} = R_{jt} - (a_j + b_j R_{mt})$$

(2)

where each of the parameters has been previously defined. The average abnormal return for a specific event date is the mean of all the individual firm abnormal returns for that date

$$AR_t = \frac{\text{Sum } ABR_{jt}}{N}$$

(3)

where $N$ is the number of firms used in the calculation. The cumulative average return (CAR) for each event interval is calculated as follows:

$$CAR_{T1,T2} = \text{Sum } AR_t$$

(4)

Lee (1991) used the CRSP Daily Excess Return file. The method used by CRSP to calculate excess returns is based on the returns to a firm in excess of securities in a similar standard deviation or beta portfolio. The excess return is defined as the return to an individual security minus the return to a similar risk portfolio for a specific time period. The CRSP excess returns are calculated following the methods developed by Scholes and Williams (1977). The essential steps to calculate a firm’s “excess” return for the CRSP Daily Excess Return file are as follows: calculate the firm's beta for each year; rank all the firms by size of beta and divide these stocks into 10 equal portfolios (deciles) by beta size; calculate beta decile portfolio’s average return per day; and calculate the firm’s excess return by subtracting the appropriate beta portfolio daily return from the actual stock return for the stock’s beta decile. This excess return is defined by Lee as the abnormal return.

Each of the steps is delineated below. In the Lee method, betas for each company for each year are calculated as follows:

$$b_j = \frac{\text{Sum}(ret_{j,t} - mret_{3,t}) - (1/n) \cdot \text{Sum}(ret_{j,t}) \cdot \text{Sum}(mret_{3,t})}{\text{Sum}(mret_{t} - mret_{3,t}) - (1/n) \cdot \text{mret}_{3,t} \cdot \text{mret}_{t}}$$

(5)

where
\[ ret_{j,t} = \log(1 + \text{return for security } j \text{ on day } t), \]
\[ mret_{t} = \log(1 + \text{value-weighted market return on day } t), \]
\[ mret_{3t} = mret_{t-1} + mret_{t} + mret_{t+1} \text{(a 3-day moving average market window), and} \]
\[ n = \text{number of observations for the year.} \]

The firms are classified into portfolios by beta deciles and the average equally-weighted return for each day is calculated as follows:
\[ \text{Prett} = \frac{1}{M} \sum \text{ret}_{j,t} \quad (6) \]

where
\[ \text{Prett} = \text{the specific beta portfolio mean return on day } t, \]
\[ m = \text{number of securities in the portfolio.} \]

Next, the excess return (BXret), which is used as the abnormal return in Lee's method, is computed as follows:
\[ \text{BXret}_{j,t} = R_{j,t} - \text{Prett} \quad (7) \]

The average daily residuals (ARt) reported by Lee are then calculated as follows:
\[ \text{ARt} = \frac{\sum \text{BXret}_{j,t}}{N} \quad (8) \]

Lee's method calculates the cumulative average residuals (CARs) in exactly the same manner as the method of Howe and Kelm in equation (4). Lee's method is essentially the commonly used market adjusted event model (MAM) where the market return is the appropriate beta portfolio return.

Both studies use the significance tests designed by Brown and Warner (1985). However, each study reports the \( t \) statistics for just a few selected intervals. Lee chooses to use a two-tailed test of significance. It is unclear whether Howe and Kelm use one or two-tailed tests. Thus, the results of significance for both one and two-tailed tests are reported here.

**RESULTS**

The ARs and CARs for the common stock of U.S. firm’s listing on the London Stock Exchange are presented in Table 1. The reported days and intervals are chosen to correspond with those used by Lee (1991) and Howe and Kelm (1987). Column 2 has the ARs from Lee's study, and Column 3 has his CARs (Lee, 1991, Table 3, p. 589). Columns 4 and 5 show the results from the H-K market model method for the ARs and CARs, respectively. As found by Lee, as well as by H-K, there are almost no significant ARs in the sample. There is only one AR significant at the .05 level in this study (Day -5), versus three in Lee's study (Days -30, -20, +20). The most visible difference between these results and those of Lee is the consistent negative CARs for the H-K method, which start at -70 (CAR [-90, -70]) in Column 5 and continue through +40 (i.e., CAR [-90, +40]). This pattern of negative CARs over the entire period is very similar to those found by Howe and Kelm for the Basel, Frankfurt, and Paris Stock Exchanges. They are unlike the results of Lee, which do not turn consistently negative until after the event date.

Using the two-tailed test, the significance of the CARs for this study is similar to that found by Lee. There is no CAR in either study that is significant at the .05 level of significance. This finding is also similar to the H-K result for the Paris Stock Exchange. However, H-K reported that the Frankfurt "CAR becomes significantly negative on Day -21 (not shown) and remains significant thereafter." The Basel CAR remains significantly negative from Day +10 on. Therefore, because the significance of the CARs are like Lee's results but the pattern of CARs is similar to H-K's results, it is important to compare the specific CAR intervals reported in the Lee and Howe-Kelm studies for the London Stock Exchange cross-listings by U.S. companies.
Table 2 contains the LSE data reported by Lee (1991, Table 4, p. 590) for specific CAR intervals and the H-K data for Basel, Frankfurt, and Paris, as well as the findings from this study on the LSE sample using the H-K method. An interesting difference occurs between this study's pre-event CAR [-90, -1] of -0.43 percent and that of Lee, 0.11 percent. This study finds a negative CAR for the interval before the actual listing on the LSE versus Lee's positive CAR. This is similar to the H-K pre-event findings for all three of the other international exchange listings. However, only the Frankfurt listings are found to be significantly negative in the H-K study. None of the other CARs is significantly different from zero. The insignificant negative AR [0] of -.1 percent in this study is similar to that found in Lee's study.

The major differences between Lee's findings and those in this study are the CARs for both the entire period and the post-event period. For the entire event period, Lee reports a CAR [-90, 40] of -0.64 percent. The CAR [-90, 40] in this study, -3.50 percent, is more than five times more negative than that found by Lee. While neither empirical study finds the CARs for the entire period to be significant at the 5 percent level for a two-tailed test, this study finds that the CAR [-90, 40] is significant at the 10 percent level for a two-tailed test (5 percent level for a one-tailed test). The CAR [-90, 40] of -3.50 percent in this study is much closer to the magnitude of the CARs found by H-K for the same interval for Basel (-5.5 percent), Frankfurt (-5.0 percent), and Paris (-2.2 percent) than that found by Lee (-0.64 percent). The t-statistic for the Basel CAR for the entire period is -3.56 (H-K, p. 56) compared to this study's t-statistic of -1.66 and Lee's t-statistic of -0.38. Thus, the H-K findings are generally more significant for the entire period than those in this study. However, an important pattern in the CARs in this study begins at the CAR [-90, 30] of -2.7 percent in Table 1 in that it is significant at the 10 percent level with a one-tailed test. The CAR [-90, 40] of -3.5 percent is significant at the 10 percent level with a two-tailed test (5 percent with a one-tailed test). This pattern brings to question Lee's conclusion that the wealth impact to U.S. firms listing on the LSE is different from that found by Howe and Kelm.

This pattern of increasingly negative CARs in both magnitude and level of significance continues until the CAR [-90, 49] of -4.41 percent becomes significant at the 5 percent level for the two-tailed test (t-statistic of -2.03, not reported in the tables). Although this event interval is outside the Lee (1991) and Howe and Kelm (1987) range, it raises the question of whether the impacts from listing on the London Stock Exchange cause a significant and long-term change in shareholders' wealth after the event date. Lee (1991) concludes that LSE listings do not cause significant permanent changes to firm value. However, both studies limit their post-event period to only 40 trading days (approximately 8 weeks). The long-term post-event impact of international listings on risk is extensively studied by Howe and Madura (1990). They conclude that international listings cause no change in market risk or firm specific risk. However, they did not consider long-term changes in returns.

To consider the long-term impact on shareholder wealth from listing on the LSE, we turn to the remaining interval reported in Table 2, CAR [1, 40]. The CAR [1, 40] in this study is a negative -2.96 percent, which is very close to the value reported by H-K for the Basel Stock Exchange (-2.1 percent), yet six times more negative than the Lee result (-.47 percent). In contrast to the Lee and to the Howe and Kelm results, the CAR [1, 40] of -2.96 percent in this study has a t-statistic of -2.55, which is significant at the 5 percent level with a two-tailed test (1 percent level with a one-tailed test). In fact, the post-event CARs become increasingly more negative and increasingly more significant as the post-listing period lengthens.

Table 3 contains the CARs for various intervals in the post-event period for up to 500 trading days after U.S. companies cross-listed on the LSE. This period is approximately two calendar years long. It is evident that as the interval from listing increases, the size of the loss from listing on the LSE increases.
and the significance of the CAR increases. The CAR [1, 50] ending two weeks after that reported by Lee (1991) and Howe and Kelm (1987) is -4.04 percent with a t-statistic of -3.11 (significant at the .01 level for the two-tailed t test). The CAR [1, 250] represents the risk-adjusted impact an investor would experience from his U.S. company listing on the LSE for the first year after the event. It is a highly significant -13.58 percent \((t = -4.67)\). The CAR [1, 500] reports the risk-adjusted result for the investor from LSE listing for two years after the event. It is a highly significant -29.83 percent \((t = -7.25)\). Thus, contrary to Lee's conclusions, listing on the LSE appears to cause highly significant, persistent, and long-term damage to shareholders' wealth. These results are consistent with those of Howe and Kelm. They support H-K's normative implication: "... corporate managers who are concerned with the financial well-being of their common shareholders should avoid foreign listing" (H-K, 1987, p.56).

Several studies on the impacts on shareholder wealth from changes in exchange listings in the U.S. are referenced in Lee (1991). They include Grammatikos and Papaioannou (1986); Sanger and McConnell (1986); Fabozzi (1982); Ying, Lewellen, Schlarbaum, and Lease (1977); and Van Horne (1970). All these studies report negative post-listing abnormal returns. The annualized negative abnormal returns in these studies range from -1.25 percent for Sanger and McConnell (1986) to -17.1 percent for Fabozzi (1982). These studies, which employ various event study methods and market indexes, find consistently negative stock price reactions with varying degrees of statistical significance in the post-listing period. Several event study models were used in this study to test the long-term impact on firm value from U.S. companies cross-listing on the LSE. Every model reports statistically significant long-term negative stock price reactions to LSE listing (e.g., raw returns, comparison period, market adjusted models with the equally-weighted CRSP index, market adjusted models with the value-weighted CRSP index, or market adjusted models with the SP500). Table 3 contains Z statistics generated from a standardized market model. This model is used by Sanger and McConnell (1986) and Grammatikos and Papaioannou (1986) in their change of U.S. exchange listing studies. The large, negative post-event CARs are very statistically significant with this model. These findings indicate significant average annual excess losses from LSE listings of about 14 percent. Thus, the statistical significance of these findings is robust for several different event models.6

**CONCLUSIONS AND IMPLICATIONS**

The results of U.S. listings on the LSE are like those reported by Howe and Kelm (1987) for other international listings. The post-listing experience is bad for the firms' U.S. stock prices. The new finding in this study is that the longer the post-period holding of the stock, the worse and more statistically significant is the loss to the shareholders.

These results call to questions those found by Lee (1991). Some support can be given to the periods examined by Lee with two-tailed significance tests. However, the long-term findings in this study contradict the conclusions drawn by Lee that international listings have no permanent adverse impact on shareholder wealth. Lee's results appear to be due to the specific method he uses to calculate abnormal returns.

The evidence in this study supports the implications suggested by Howe and Kelm (1987). International listings, on average, should be avoided by U.S. firms. International cross-listings do not offer the likelihood of liquidity (or marketability) gains. In fact, on average they result in significant long-term negative impacts on risk-adjusted returns.
Table 1: Average Abnormal Returns (AR) and Cumulative Average Abnormal Returns (CAR) to U.S. Companies Listed on the London Stock Exchange between January 1962 and December 1986

<table>
<thead>
<tr>
<th>Days Around Lee’s Results (N = 119)</th>
<th>Howe &amp; Kelm Method (N = 121)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Listing Date</td>
<td>AR</td>
</tr>
<tr>
<td>-90</td>
<td>-0.00069</td>
</tr>
<tr>
<td>-80</td>
<td>0.00224</td>
</tr>
<tr>
<td>-70</td>
<td>0.00172</td>
</tr>
<tr>
<td>-60</td>
<td>0.00135</td>
</tr>
<tr>
<td>-50</td>
<td>0.00111</td>
</tr>
<tr>
<td>-40</td>
<td>-0.00169</td>
</tr>
<tr>
<td>-30</td>
<td>0.00275$^a$</td>
</tr>
<tr>
<td>-20</td>
<td>-0.00345$^a$</td>
</tr>
<tr>
<td>-10</td>
<td>0.00065</td>
</tr>
<tr>
<td>-5</td>
<td>0.00267</td>
</tr>
<tr>
<td>-4</td>
<td>0.00014</td>
</tr>
<tr>
<td>-3</td>
<td>0.00116</td>
</tr>
<tr>
<td>-2</td>
<td>0.00119</td>
</tr>
<tr>
<td>-1</td>
<td>-0.00063</td>
</tr>
<tr>
<td>0</td>
<td>-0.00075</td>
</tr>
<tr>
<td>1</td>
<td>-0.00047</td>
</tr>
<tr>
<td>2</td>
<td>-0.00131</td>
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<tr>
<td>3</td>
<td>-0.00030</td>
</tr>
<tr>
<td>4</td>
<td>0.00056</td>
</tr>
<tr>
<td>5</td>
<td>0.00055</td>
</tr>
<tr>
<td>10</td>
<td>0.00152</td>
</tr>
<tr>
<td>20</td>
<td>0.00336$^a$</td>
</tr>
<tr>
<td>30</td>
<td>-0.00132</td>
</tr>
<tr>
<td>40</td>
<td>0.00013</td>
</tr>
</tbody>
</table>

$^a$ Significant at the 10 percent level, two-tail test.
$^b$ Significant at the 5 percent level, two-tail test.
$^+$ Significant at the 10 percent level, one-tail test.
$^{++}$ Significant at the 5 percent level, one-tail test.

Table 2: Average Abnormal Returns (AR) and Cumulative Average Returns (CAR) for Individual Overseas Stock Exchanges on the Basis of 131-Day Test Period(t-statistics in Parentheses)

<table>
<thead>
<tr>
<th>LEE H-K Method</th>
<th>South America</th>
<th>Japan</th>
<th>New Zealand</th>
<th>Switzerland</th>
<th>Sweden</th>
<th>Netherlands</th>
<th>Denmark</th>
<th>France</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR [-90, -1]</td>
<td>0.110</td>
<td>-0.43</td>
<td>-3.2</td>
<td>-5.3$^*$</td>
<td>-1.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AR [0]</td>
<td>-0.075</td>
<td>-0.10</td>
<td>0.2</td>
<td>0.1</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAR [1, 40]</td>
<td>-0.678</td>
<td>-2.96$^a,-++$</td>
<td>2.1</td>
<td>0.2</td>
<td>-1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAR [-90, 40]</td>
<td>-0.643</td>
<td>-3.50$^a,-++$</td>
<td>-5.5$^*$</td>
<td>-5.0$^*$</td>
<td>-2.2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a$ These figures are from Lee (1991, Table 4, p. 590).
$^*$ Significant at the 5 percent level as reported by Howe and Kelm (1987).
Table 3: Post-Listing Performance for the London Stock Exchange Sample

<table>
<thead>
<tr>
<th>Interval</th>
<th>CAR (%)</th>
<th>t-statistic</th>
<th>Z-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 50</td>
<td>-4.04</td>
<td>-3.11**</td>
<td>-3.39+++</td>
</tr>
<tr>
<td>1, 60</td>
<td>-3.56</td>
<td>-2.50*</td>
<td>-2.65+++</td>
</tr>
<tr>
<td>1, 70</td>
<td>-4.70</td>
<td>-3.06**</td>
<td>-3.42+++</td>
</tr>
<tr>
<td>1, 80</td>
<td>-4.84</td>
<td>-2.94**</td>
<td>-3.89+++</td>
</tr>
<tr>
<td>1, 90</td>
<td>-5.49</td>
<td>-3.14**</td>
<td>-3.66+++</td>
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<td>1, 100</td>
<td>-6.01</td>
<td>-3.27**</td>
<td>-4.02+++</td>
</tr>
<tr>
<td>1, 150</td>
<td>-7.45</td>
<td>-3.31***</td>
<td>-4.33+++</td>
</tr>
<tr>
<td>1, 200</td>
<td>-11.05</td>
<td>-4.25***</td>
<td>-5.56+++</td>
</tr>
<tr>
<td>1, 250</td>
<td>-13.58</td>
<td>-4.67***</td>
<td>-6.03+++</td>
</tr>
<tr>
<td>1, 300</td>
<td>-17.90</td>
<td>-5.62***</td>
<td>-7.26+++</td>
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<tr>
<td>1, 350</td>
<td>-21.02</td>
<td>-6.11***</td>
<td>-7.97+++</td>
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<tr>
<td>1, 400</td>
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<td>-6.12***</td>
<td>-7.82+++</td>
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<tr>
<td>1, 450</td>
<td>-24.55</td>
<td>-6.29***</td>
<td>-8.16+++</td>
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<tr>
<td>1, 500</td>
<td>-29.38</td>
<td>-7.25***</td>
<td>-9.31+++</td>
</tr>
</tbody>
</table>

* Significant at the .05 level for two-tailed test.
** Significant at the .01 level for two-tailed test.
*** Significant at the .001 level for two-tailed test.
+ + Significant at the .01 level for Z test.
+++ Significant at the .001 level for the Z test.

ENDNOTES

1. The Toronto Stock Exchange sample contained only 22 firms. The relative smallness of the size of the Toronto exchange, of the size of the sample, and of the contribution to the study is considered as ample reason to concentrate the main effort of this research on the London Stock Exchange listings.


3. Howe and KeIm (1987) call their CARs cumulative average returns. Lee calls his CARs cumulative average residuals. Both terms are correct and are synonymous in this paper.

4. The last column reported in Lee's Table 4 (1991, p. 590) is labeled incorrectly. The figures reported in the last column are from Howe and KeIm's Exhibit 2 (1987, p. 54). They are for those U.S. firms listing on one of the three international exchanges with their very first international listing. The number in the sample is 102 (not 158), as reported by Lee. Even that number (reported by H-K in their Exhibit 2) is suspect because they report the same sample size as 98 in Exhibit 1. Because Lee (1991) does not sort the LSE sample by U.S. firms listing on their first international exchange, the information in the column is not relevant and his last column is not reproduced here.

5. Similar tests to those of Howe and Madura (1990) were run on the LSE sample in this research. No significant changes in betas or standard deviations were found.
6. The long-term statistical significance of the impact on U.S. firms' common stock returns is also found with the market adjusted model, the raw returns model, and the constant mean return model.

REFERENCES


