

December 2007

## Equity Offerings by Firms That Emerged from Bankruptcy

Surendranath Jory  
*University of Michigan Flint*

Jeff Madura  
*Florida Atlantic University*

Follow this and additional works at: <https://digitalcommons.pepperdine.edu/jef>

### Recommended Citation

Jory, Surendranath and Madura, Jeff (2007) "Equity Offerings by Firms That Emerged from Bankruptcy," *Journal of Entrepreneurial Finance and Business Ventures*: Vol. 12: Iss. 2, pp. 1-22.

DOI: <https://doi.org/10.57229/2373-1761.1025>

Available at: <https://digitalcommons.pepperdine.edu/jef/vol12/iss2/2>

This Article is brought to you for free and open access by the Graziadio School of Business and Management at Pepperdine Digital Commons. It has been accepted for inclusion in The Journal of Entrepreneurial Finance by an authorized editor of Pepperdine Digital Commons. For more information, please contact [bailey.berry@pepperdine.edu](mailto:bailey.berry@pepperdine.edu).

# **Equity Offerings by Firms That Emerged from Bankruptcy**

**Surendranath Jory<sup>\*</sup>**  
**University of Michigan – Flint**

**and**

**Jeff Madura<sup>\*\*</sup>**  
**Florida Atlantic University**

Entrepreneurship is not only used to create a business idea, but also to restructure a business in response to environmental conditions. Firms that issue equity after emerging from bankruptcy are unique in that they exhibit less asymmetric information than other firms that issue equity. They were previously subject to the SEC disclosure requirements when they had publicly-traded securities, and were required to disclose information about their assets, liabilities, and governance while operating under Chapter 11 bankruptcy laws. Our analysis determines that the mean underpricing of the firms that engaged in public stock offerings after emerging from bankruptcy is 4.49 percent, while the mean underpricing for the traditional IPOs is 15.53 percent. A multivariate analysis reinforces the lower degree of underpricing of public offerings by firms that emerged from bankruptcy, while controlling for other characteristics that could affect the level of underpricing. We also find that the aftermarket stock price performance of the firms that emerged from bankruptcy is more favorable than that of traditional IPOs. All results are attributed to a lower degree of asymmetric information associated with public stock offerings by firms that emerge from bankruptcy.

## **Introduction**

When a firm reorganizes under Chapter 11 bankruptcy, stockholders are commonly left with no equity; the company's liabilities are restructured, some creditors receive new equity; and some of the company's assets may have been sold. The reorganized company is under the control of new owners, directors and management. Entrepreneurship is required to restructure a new business plan, which must include a strategy to finance the business that emerges from bankruptcy. After emerging from bankruptcy, the firm may undertake an equity offering to

---

<sup>\*</sup> Surendranath Jory is assistant professor of finance at the University of Michigan at Flint. His research interests include corporate bankruptcy and venture capital.

<sup>\*\*</sup> Jeff Madura is the Sun Trust Bank professor of finance at Florida Atlantic University. He has authored several textbooks and publications in international finance and financial markets.

raise capital for investment and financing purposes and to create a market in which the new owners can convert their shareholdings into cash. Such an equity offering is a special type of initial public offering (IPO).

Post-bankruptcy equity offerings are distinctly different from traditional IPOs. They typically represent a reentry into the stock market. Many bankrupt firms had at one time publicly traded securities and were subject to SEC disclosure requirements. Hence, there is likely to be substantially more information available to investors to assess the expected market value of these firms upon their subsequent return to public ownership. Second, the dynamics of U.S. bankruptcy proceedings provide information to the public regarding assets, liabilities, governance and internal controls of the firm emerging from bankruptcy.

These firms have more transparency, so that their public offerings should be subject to a smaller degree of asymmetric information than the traditional IPOs. Since underpricing is commonly attributed to asymmetric information, firms emerging from bankruptcy that engage in public offerings should exhibit less underpricing. To the extent that these firms experience a more limited jump in stock price on the offer date, they are less susceptible to a long-term downward drift in price over time. Our goal is to assess the underpricing and long-term stock price performance of firms that engage in public stock offerings after emerging from bankruptcy. We find that underpricing is less pronounced in post-bankruptcy equity offerings than in traditional IPOs. In addition, these equity offerings do not exhibit any reversal in returns in the long-run.

### **Information During the Bankruptcy Reorganization Process**

Once a company files for bankruptcy, it is also engaged in an information dissemination process. Upon entering bankruptcy, it must file a written disclosure statement and a plan of reorganization with the bankruptcy court. The disclosure statement is a document that contains information regarding the assets, liabilities and business affairs of the company, so that creditors can make an informed judgment about the plan of reorganization.<sup>1</sup> The plan should divulge all of the company's liabilities and how they are restructured. While operating under Chapter 11 bankruptcy, firms are required to make extensive, regular disclosures of their financial and operating data to the court. Additional information is contained in the court testimony of expert witnesses, management and creditors (see Gilson, John and Lang (1990) for more details).

At the end of the bankruptcy process, information on the firm's value is confirmed through the reorganization plan. Media releases, the disclosure statement, the regular accounts of financial and operating data and the plan of reorganization constitute a unique set of information about the bankrupt company that is available to the public to determine the net worth of the company upon its emergence from bankruptcy. Also, given that a bankruptcy judge presides over the administration of a bankruptcy case and that the U.S. bankruptcy system requires transparency and accountability; the credibility of the information revealed during the bankruptcy process is further enhanced. For this reason, the extent of information asymmetry that may exist between the company and the market is low.

### **IPO Underpricing**

IPO underpricing has averaged 19 percent over time (see Ritter and Welch (2002)). Various reasons for underpricing have been offered, such as to signal good quality (Allen and Falhauber (1989)), to develop a reputation among investors (Ritter and Welch (2002)), to

---

<sup>1</sup> Source: [www.uscourts.gov/bankruptcycourts/BB101705final2column.pdf](http://www.uscourts.gov/bankruptcycourts/BB101705final2column.pdf)

solicit information from investors about potential interest (Benveniste and Spindt (1989), Sherman and Titman (2002)), to facilitate marketing (Habib and Ljungqvist (2001)), to avoid future lawsuit from investors (Tinic (1988), Hughes and Thakor (1992)), and to motivate the underwriter (Baron (1982)). Most of these reasons and their justifications are based on the existence of some type of asymmetric information in the IPO process. Asymmetric information leads to ex ante uncertainty about the true value of the firm.

Muscarella and Vetsuypens (1989) test the asymmetric information hypothesis and the underpricing of IPOs by comparing a sample of IPOs that previously underwent a leveraged buyout (LBO) with a control sample of non-LBO IPOs. They argue that the uncertainty about the value of the LBOs should be substantially reduced because of the availability of public information before the IPO. Using a sample of LBOs and a control sample of non-LBO IPOs, they find average underpricing of 2.04% for the LBOs and 7.97% for the control sample. In another related study, Ang and Brau (2002) show that firms going public that are more transparent incur lower issuance costs. In their study, the size- and date-matched control sample consisting of non-LBO firm-commitment IPOs displays greater underpricing than does their LBO sample, 8.04% vs. 5.47%. Results of these two studies suggest that IPOs by firms that were previously publicly traded are less underpriced than other IPOs.

## **II. Hypotheses**

Because post-bankruptcy offerings are unique, they may exhibit pricing characteristics that differ from traditional IPOs.

### **A. Hypothesis About Underpricing**

Like LBO firms, the firms that filed for Chapter 11 were once publicly traded, and this type of information should increase transparency. These firms were required to disclose information in the bankruptcy reorganization process, we hypothesize that they exhibit a lower degree of underpricing than traditional IPOs.

However, we consider a counter hypothesis. When firms reorganize, their previous business operations may have been altered, as their reorganization is finalized. This could create more uncertainty about their future performance. In addition, a previous bankruptcy may create some suspicion in the minds of investors, which could add to the uncertainty. Some investors may require that the price of equity of a bankrupt firm be discounted more to compensate for concerns due to its previous performance as a public company. These forces allow for the possibility of a greater degree of underpricing in post-bankruptcy offerings than in traditional IPOs.

### **B. Hypothesis About Long-run Stock Price Performance**

In general, studies have found weak stock price performance following public stock offerings (see, for example, Ritter (1991), Loughran and Ritter (1995), and Spiess and Affleck-Graves (1995)). They explain underperformance in terms of investor sentiment that causes excessive optimism in the initial stage of the offering. Once the sentiment wears off, returns decline to a sustainable equilibrium, and stocks consequently underperform. In essence, the poor performance can be attributed to a misinterpretation about the signal of a public offering by firms that performed well prior to the offering.

Since bankrupt firms exhibit poor performance prior to their equity offerings, the possibility of the usual overexcitement found in traditional IPOs may be absent. In addition, the additional information about bankrupt firms may increase transparency and prevent the hype that is associated with some traditional IPOs. Just as there may be less underpricing because of less uncertainty surrounding the price, there should be less chance that the market will be

overly optimistic about the post-bankruptcy offering. Therefore, we hypothesize that there will be a smaller correction (if at all) following post-bankruptcy offerings.

### III. Data and Methodology

To test our hypotheses, we compile a data base of post-bankruptcy offerings and a control sample of matched traditional IPOs, and apply tests of underpricing and long-term share price performance.

#### A. Data

The sample consists of equity offerings by firms that filed for and emerged from bankruptcy during the period 1985 to 2006. The primary source of information on firms emerging from bankruptcy is Lynn M. LoPucki's Bankruptcy Research Database. It is a business bankruptcy research tool on the web maintained by Professor Lynn M. LoPucki of University of California, Los Angeles Law School. This database includes all Chapter 11 bankruptcy cases filed by or against a company, since 1980, such that the company (1) has assets worth \$100 million or more at the time of filing, measured in 1980 dollars, and (2) is required to file 10-Ks with the SEC. The data are gathered from a variety of sources, the most important of which are the bankruptcy courts' files (on PACER (Public Access to Court Electronic Records) service, which provides the full-text source for bankruptcy documents) and the bankrupt company's filings with the SEC.

The Securities Data Corporation (SDC) Platinum Global New Issues Database provides information regarding equity offerings by bankrupt firms on or after their respective emergence date. To be included in the sample, a firm must have price and return data in the University of Chicago's Center for Research in Security Prices (CRSP) post-emergence. Our sample consists of 66 firms that conducted a public offering after emerging from bankruptcy.

#### B. Methodology for Testing Underpricing

Underpricing is defined as the offer-to-close return, which is calculated as the percentage difference between the offer price and the first-day closing price ( $P_1$ ):

$$\text{Offer-to-close return} = (\text{Offer Price} - P_1) / \text{Offer Price} \quad (1)$$

#### C. Multivariate Tests of Underpricing

To further test whether post-bankruptcy equity offerings are less underpriced than traditional IPOs, we use multivariate analysis. The sample includes the post-bankruptcy equity offerings and the sample of matched traditional IPOs. A matched traditional IPO is in the same year as its corresponding sample firm and is in the same industry and closest in size to the sample firm

The dependent variable is the amount of underpricing. The independent variable of interest to test our underpricing hypothesis is *BANKRUPT*, a dummy variable that takes a value of 1 if the equity offering is post-bankruptcy, and a value of 0 for traditional IPOs. We expect that the *BANKRUPT* dummy variable should be negative, which reflects less underpricing for post-bankruptcy IPOs than traditional IPOs.

We also control for other characteristics that may affect the underpricing based on studies by Hogan, Olson and Kish (2001) and Lowry and Schwert (2002):

- i. *OVERPCT* is the over-allotment amount sold as a percentage of the deal value. We predict a positive relationship between *OVERPCT* and underpricing, consistent with the

hypothesis that investment bankers use the over-allotment option to put upward pressure on initial returns to build and maintain good relationships with investors (Carter and Dark (1991)).

- ii. *NMGR* is the number of firms participating in the underwriting process of the issue. As explained in Hogan, Olson and Kish (2001) a larger number of firms in the underwriting process may result in more information to be conveyed to potential investors. With more information available, the issue is scrutinized to a greater degree and the need for underpricing is lower. Hence, we predict an inverse relationship between *NMGR* and underpricing.
- iii.  $\Delta P$  is the percentage change between the middle of the initial estimated price range and the offer price. In an IPO, adjustment is made to the offering price when new information is discovered (see Benveniste and Spindt (1989)) and underpricing rewards investors for providing information during road shows. Hanley (1993) documents that the difference between the final offer price of an IPO and the initial filing range is positively related to the stock's subsequent initial return. Hence, we predict a positive relationship between the percentage change from initial price to offer price and underpricing.
- iv. *HOT* is a binary variable equal to 1 if the issue occurs between January 1999 and December 2000 and 0 otherwise. Our sample period covers the internet bubble period; hence, we incorporate an internet bubble dummy to control for market overvaluation and timing. We define the "hot" period consistent with Ljungqvist and Wilhelm (2003), and expect that underpricing is higher during this time period.

The multivariate model is as follows:

$$UNDERPRICING_i = \alpha + \beta_1 BANKRUPT_i + \beta_2 OVERPCT_i + \beta_3 NMGR_i + \beta_4 \Delta P_i + \beta_5 HOT_i + \varepsilon_i (2)$$

#### **D. Methodology for Testing Long-run Share Price Performance**

Barber and Lyon (1997) calculate buy-and-hold abnormal returns (BHARs) to estimate long-run abnormal returns. A BHAR is measured as the holding period return on the sample firm less the holding period return on a comparable asset or portfolio. We compute the BHARs over several intervals up to 36 months following the equity offering, and use two benchmarks in calculating BHARs: (i) an industry-and-size matched sample of non-equity-issuing firms, and (ii) a size-and-book-to-market matched sample of non-equity-issuing firms.

An industry-and-size matching firm is a firm with the same four-digit SIC code and with the market capitalization closest to that of the sample firm, using the closing market capitalization on the first day of trading for the equity offering firm, and the market capitalization at the end of the previous year for the matching firm. If a matched firm with the same four-digit SIC code is not available, the firm with the same three-digit SIC code, and with the market capitalization closest to that of the sample firm is chosen. A size- and book-to-market matching firm is a firm with a market capitalization within 30 percent of the market capitalization of the equity offering firm and closest in book-to-market ratio. Firms with a market capitalization greater than or less than 30 percent of the market capitalization of the post-bankruptcy equity offering firm are not considered as matching firms.

We also use the three-factor model developed by Fama and French (1993) to calculate long-run abnormal returns. The three-factor model is applied by regressing the post-event daily excess returns of the equity offering firms on a market factor, a size factor, and a book-to-market factor as follows:

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + s_iSMB_t + h_iHML_t + \varepsilon_{it} \quad (3)$$

where,  $R_{it}$  is the daily return on the common stock of firm  $i$ ,  $R_{ft}$  is the return on three-month Treasury Bills,  $R_{mt}$  is the return on a value-weighted market index,  $SMB_t$  is the return on a value-weighted portfolio of small stocks less the return on a value-weighted portfolio of large stocks, and  $HML_t$  is the return on a value-weighted portfolio of high book-to-market stocks less the return on a value-weighted portfolio of low book-to-market stocks. The intercept represents the mean abnormal return in the event period. We test whether the intercept term is zero in order to determine whether the abnormal return is significant.

#### IV. Results

##### A. Descriptive Statistics

In Panel A of Table I, we show the breakdown of post-bankruptcy equity offerings by year. The largest number of post-bankruptcy equity offerings occur in year 2004 followed by years 1996 and 2005. The years 2003, 2004 and 2005 comprise 40 percent of the total sample of post-bankruptcy equity offerings. Only 3 percent of the offerings occur during the hot IPO period.

In Panel B of Table I, we show the distribution of post-bankruptcy equity offerings by stock exchange. Fifty-eight percent of post-bankruptcy equity offerings are made by NYSE-listed firms; 35 percent are made by NASDAQ-listed firms; and, only 8 percent of the offerings are made by AMEX-listed firms.

In Panel C of Table I, we show the use of proceeds from the post-bankruptcy equity offerings. The most common cited reason is general corporate use, which represents 29 percent of the sample. The second most-cited reason is secondary uses, which represents 23 percent of the sample. Other reasons included acquisition financing as the main use of proceeds, repayment of debt, and working capital needs. Fourteen percent of the sample firms do not mention their planned use of proceeds.

In Panel D of Table I, we show the occurrence of post-bankruptcy equity offerings by industry. The highest number of such offerings is made by air transportation companies. Previously bankrupt companies in the oil and gas industry have the second highest number of equity offerings post-bankruptcy.

In Panel E of Table I, we show the lead managers who are involved in the post-bankruptcy equity offerings. Goldman Sachs, Merrill Lynch and Salomon Brothers are the most involved with 15, 14 and 13 percent of the offerings, respectively.

Panel F of Table I shows that 73 percent of the post-bankruptcy equity offerings are syndicated. Panel G of Table I shows that in 42 percent of the offerings, there are no lock-up provisions.

In Table II, we report summary statistics of various characteristics for the sample of 66 post-bankruptcy equity offerings. The mean time spent in Chapter 11 bankruptcy by the sample firms is 1.75 years and the median is 1.41 years. The mean time period between emergence from Chapter 11 bankruptcy to equity offering is 3.48 years with the median equaling 2.20 years. The mean and median offer prices are \$18.97 and \$16.38, respectively. The average total proceeds from post-bankruptcy equity offerings is \$151.47 million and the median is \$105.95 million. The mean over-allotment amount sold as a percentage of the total amount offered is 7.89 percent while the median is 9.39 percent. The mean and median number of lead, co-lead and co-managers involved in post-bankruptcy equity offerings are both equal to 3. The mean change in mid-file price to offer price is 4 percent while the median is -2 percent. The mean

and median gross spreads are both close to 5 percent. The mean and median lead underwriters' ratings are both equal to 9.

### **B. Underpricing**

In Table III, we present the results for underpricing of post-bankruptcy equity offerings. Underpricing is measured as the difference between the offer price and the closing price at the end of the offer day. The mean underpricing is 4.49 percent and is significantly different from zero at the 1 percent level. The median underpricing is 1.74 percent. Using both the sign test and the Wilcoxon signed rank test, we conclude that the underpricing is significant. Both tests are the non-parametric versions of the *t*-test.

To test our hypothesis that underpricing is lower for IPOs by firms that emerged from bankruptcy, we compare post-bankruptcy equity offerings with traditional IPOs matched on offer year and industry. In a second analysis, we compare post-bankruptcy equity offerings to traditional IPOs matched on offer year and the size of the issue. The results are presented in Table IV.

In Panel A of Table IV, we compare the underpricing of post-bankruptcy equity offerings with traditional IPOs. A matching traditional IPO is conducted in the same year as the post-bankruptcy equity offering and in the same industry. If there is more than one match in the same industry, we select the one that is closest in size as the matching firm. The mean underpricing for the traditional IPOs is 15.53 percent compared to 4.49 percent for the sample of post-bankruptcy equity offerings. This difference in underpricing is statistically significant at the 1 percent level.

In Panel B of Table IV, we compare the underpricing of post-bankruptcy equity offerings with a second set of traditional IPOs. The matching traditional IPO is conducted in the same year as the post-bankruptcy equity offering and is closest in issue size to the post-bankruptcy equity offering. The mean underpricing for the traditional IPOs is 15.80 percent compared to 4.49 percent for the sample of post-bankruptcy equity offerings. This difference in underpricing is statistically significant at the 1 percent level. The results in Tables III and IV support the hypothesis that the underpricing of post-bankruptcy equity offerings is lower than the underpricing of traditional IPOs.

### **C. Multivariate Analysis of Underpricing**

To test whether post-bankruptcy equity offerings are less underpriced than traditional IPOs while controlling for other factors, we use multivariate analysis. The analysis is applied to the pooled samples containing the post-bankruptcy equity offerings and the matched traditional IPOs. A matched traditional IPO is a matching firm that engaged in an IPO in the same year as its corresponding sample firm and is either in the same industry or closest in size to the sample firm.

The dependent variable in the multivariate analysis is the amount of the underpricing. Results are presented in Table V. The coefficient of the variable *BANKRUPT* is negative and significant at the .01 level. This result supports the hypothesis that post-bankruptcy equity offerings are less underpriced than traditional IPOs. We attribute this result to less information asymmetry with a post-bankruptcy equity offering. In contrast to traditional IPOs, which are completely new to the market, post-bankruptcy equity offerings are conducted by firms that were once publicly traded. In addition, bankruptcy proceedings provide key information (in the form of media-releases, disclosure statement, regular accounts of financial and operating data, and a plan of reorganization) to the investing public to reevaluate the firm's potential. Hence, more information is available about post-bankruptcy equity offerings compared to traditional



IPOs. This lower level of information asymmetry results in a lower level of underpricing for post-bankruptcy equity offerings.

There also exists a negative relationship between underpricing and the number of firms participating in the underwriting process. As explained in Hogan, Olson and Kish (2001), as the number of firms participating in the underwriting process increases, there is the potential for more information to be conveyed to investors. With more information available, the issue is scrutinized to a greater degree and the need for underpricing is lower. The negative coefficient on *NMGR* in Table V suggests that the same relationship exists in post-bankruptcy equity offerings. That is, the higher the number of firms participating in the underwriting process, the lower is the underpricing.

The coefficient of the variable  $\Delta P$  is positive and statistically significant.  $\Delta P$  represents the adjustment in offer price as the underwriter obtains new information about the equity offering. The coefficient on the *HOT* variable is positive and significant at the 5 percent level. This result suggests a higher level of underpricing during the hot period, which is consistent with the findings of Ljungqvist and Wilhelm (2003)

#### **D. Long-run Stock Price Performance**

In Table VI, we present the results of BHARs up to 36 months following the equity offering. In Table VI, a matching firm is one closest in size and book-to-market, to the sample firm. BHARs are calculated for various intervals in months. A month is defined as 21 consecutive trading days. The first day starts the following day of the issue.

The *t*-tests of the mean BHARs are significant for the following holding periods: 1 month, 3 months, 6 months, 12 months and 24 months. The mean BHARs are all positive. The sign tests are significant for the 1-, 6- and 12-month(s) holding periods. The Wilcoxon signed rank tests are significant for the 1-, 3-, 6- and 12-month(s) periods. The results imply that post-bankruptcy equity offerings outperform matching firms closest in size and book-to-market.

In Table VII, we calculate the BHARs using a different set of matching firms, whereby a matching firm is one that operates in the same industry as and is closest in size to the equity-offering firm. The *t*-tests of the mean BHARs are significant for the 1-, 3- and 36-month(s) holding periods. The Wilcoxon signed rank tests yield similar results. Only the 1-month and 36-months BHARs are significant using the sign test.

Results from Tables VI and VII contrast sharply with the findings of IPO long-run abnormal returns. Ritter (1991) and Loughran and Ritter (1995) document significant negative long-run abnormal returns of IPOs. In contrast to traditional IPOs that are completely new to the market, post-bankruptcy equity offerings are conducted by firms that were once publicly traded. Hence, there exists less information asymmetry with post-bankruptcy equity offerings than with traditional IPOs. That may explain why the long-run performance of post-bankruptcy equity offerings differs markedly from that of traditional IPOs.

We also use the Fama and French (1993) three-factor model to calculate long-run abnormal returns post-issuance. Results are presented in Table VIII. The intercept represents the mean abnormal return in the one year following the issue. The year begins one day after the issue. The market-, size and book-to-market-factors are all significant at the 1 percent level. The intercept is not significantly different from zero. There is no evidence of abnormal long-term share price performance in the year following the post-bankruptcy equity offering. These results are consistent with the one-year BHAR reported in Table VII, and differ from results reported by Ritter (1991) and Loughran and Ritter (1995).

### **E. Risk profile of post-bankruptcy equity offerings**

Even if the sample firms that engage in equity offerings have low underpricing, it is possible that they experience volatile stock price movements over time. These firms went bankrupt in the past, so any minor hint of weakness could trigger investor concerns. Thus, the risk of firms that engage in public stock offerings after emerging from bankruptcy could be unusually high. We compare the aftermarket risk characteristics of equity offerings by firms that emerged from bankruptcy with: (i) matching IPO firms matched by offer year and size of the issue and (ii) matching IPO firms matched by offer year, industry and size of the issue. Risk is measured as the standard deviation of daily returns over the year following the equity offering. Results are presented in Table IX.

The average of the standard deviation of daily returns over the year following the issue is 2.87 percent for the sample firms that engage in a public stock offering after emerging from bankruptcy (see Panel A of Table IX). The average standard deviation for matching IPO firms matched on offer year and size of the issue is 3.71 percent. The average standard deviation for matching IPO firms matched on offer year, industry and size of the issue is 3.64 percent.

In Panel B of Table IX, we compare the average of the standard deviations of post-bankruptcy equity offerings with the benchmarks. Matching IPO firms matched on offer year and size of the issue have a significantly higher standard deviation than equity offerings by firms emerging from bankruptcy. The difference in the mean standard deviations is significant at the 1 percent level. Thus, the aftermarket risk as measured by stock volatility in the first year is lower for equity offerings by firms emerging from bankruptcy than for traditional IPOs.

### **V. Conclusion**

When a firm goes bankrupt, entrepreneurship is necessary to restructure it into a new business and to finance its operations. We examine the underpricing and long-run equity performance of equity offerings by firms that emerge from bankruptcy. We hypothesize that uncertainty about the value of such an offering is substantially reduced because of the availability of public information prior to the offering. First, such firms previously had publicly traded securities and were subject to the SEC disclosure requirements. Second, the dynamics of U.S. bankruptcy proceedings provide information to the investing public regarding several aspects of the firm's assets, liabilities, and governance. Hence, there is substantially more information available to investors to assess their valuations after they emerged from bankruptcy.

The mean underpricing of the firms that engaged in public stock offerings after emerging from bankruptcy is 4.49 percent, while the mean underpricing for the traditional IPOs is 15.53 percent. This difference in underpricing is statistically significant at the 1 percent level, which supports our hypothesis. A multivariate analysis that controls for other characteristics that could affect the level of underpricing reinforces our findings.

We also assess the long-term stock price performance following public offerings by firms emerging from bankruptcy. The mean BHARs are positive for all holding periods, and significant for selected holding periods. The results imply that post-bankruptcy equity offerings outperform matching firms. These results contrast sharply with the findings of IPO long-run abnormal returns by Ritter (1991), Loughran and Ritter (1995), and others. We attribute the difference to the lower degree of information asymmetry of firms that engage in public stock offerings after emerging from bankruptcy. Since there is less hype and underpricing associated with these offerings, there is less potential for an aftermarket correction. We also find that the aftermarket risk of public offerings by firms emerging from bankruptcy is lower than that of traditional IPOs.

**REFERENCES**

- Allen, F. and G. Faulhaber, 1989, Signaling by underpricing the IPO market, *Journal of Financial Economics* 23, 303-323.
- Ang, J. and J. Brau, 2002, Firm transparency and the costs of going public, *Journal of Financial Research* 25, 1– 17.
- Barber, B. M. and J. D. Lyon, 1997, Detecting long-run abnormal stock returns: The empirical power and specification of test statistics, *Journal of Financial Economics* 43, 341-372.
- Baron, D. P., 1982, A model of the demand for investment banking advising and distribution services for new issues, *Journal of Finance* 37, 955-976.
- Benveniste, L. M. and P. A. Spindt, 1989, How investment bankers determine the offer price and allocation of new issues, *Journal of Financial Economics* 24, 343-362.
- Brav, A. and P. A. Gompers, 1997, Myth or reality? The long-run underperformance of initial public offerings: Evidence from venture capital and nonventure capital-backed companies, *Journal of Finance* 52, 1791-1822.
- Carter, R. B. and F. H. Dark, 1992, An empirical examination of investment banking reputation measure, *Financial Review* 27, 355-374.
- Carter, R. B. and S. Manaster, 1990, Initial public offerings and underwriter reputation, *Journal of Finance* 45, 1045-1068.
- Carter, R. B., F. H. Dark and A. K. Singh, 1998, Underwriter reputation, initial returns and long run performance of IPO stocks, *Journal of Finance* 53, 285-311.
- Chalk, A. J. and J. W. Peavy, III, 1987, Initial public offerings: Daily returns, offering types and the price effect, *Financial Analysts Journal* 43, 65-69.
- Falkenstein, E. G. 1996, Preferences for stock characteristics as revealed by mutual fund portfolio holdings, *Journal of Finance* 51, 111-135.
- Fama, E. F. and K. R. French, 1993, Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics* 33, 3-56.
- Fernando, C., S. Krishnamurthy and P. Spindt, 2004, Are share price levels informative? Evidence from the ownership, pricing, turnover, and performance of IPO firms, *Journal of Financial Markets* 7, 377-403.
- Gilson, S. C., K. John and L. H. P. Lang, 1991, Troubled debt restructurings: An empirical study of private reorganization of firms in default, *Journal of Financial Economics* 27, 315-354.

- Gompers, P. A. and A. Metrick, 2001, Institutional investors and equity prices, *The Quarterly Journal of Economics* 116, 229-259.
- Habib, M. A. and A. P. Ljungqvist, 2001, Underpricing and entrepreneurial wealth losses in IPOs: Theory and evidence, *Review of Financial Studies* 14, 433 – 458.
- Hanley, K. W., 1993, The underpricing of initial public offerings and the partial adjustment phenomenon, *Journal of Financial Economics* 34, 231-250.
- Hansen, R. S., B. R. Fuller and V. Janjigian, 1987, The cross-allocation option and equity financing flotation costs: An empirical investigation, *Financial Management* 16, 24-32.
- Hogan, K., G. Olson and R. Kish, 2001, A comparison of reverse leveraged buyouts and original initial public offers: factors impacting their issuance in the IPO market, *Financial Review* 36, 1-18.
- Hughes, P. and A. Thakor, 1992, Litigation risk, intermediation, and the underpricing of initial public offerings, *Review of Financial Studies* 5, 709-742.
- Ibbotson, R. G., J. Sindelar, J. R. Ritter, 1988, Initial public offerings, *Journal of Applied Corporate Finance* 6, 37-45.
- Ljungqvist, A. and W. Wilhelm, 2003, IPO pricing in the dot-com bubble, *Journal of Finance* 58, 723-752.
- Loughran, T. and J. R. Ritter, 2004, Why has IPO underpricing changed over time?, *Financial Management* 33, 5-37.
- Loughran, T., and J. R. Ritter, 1995, The new issues puzzle, *Journal of Finance* 50, 23-51.
- Lowry M. and G. W. Schwert, 2002, IPO market cycles: bubbles or sequential learning?, *Journal of Finance* 57, 1171-1200.
- Muscarella, C. and M. Vetsuypens, 1989, A simple test of baron's model of IPO underpricing, *Journal of Financial Economics* 24, 125-135.
- Ritter, J. and I. Welch, 2002, A review of IPO activity, pricing, and allocations, *Journal of Finance* 57, 1795-1828.
- Ritter, J. R., 1984, The 'Hot Issue' market of 1980, *Journal of Business* 57, 215-240.
- Ritter, J. R., 1991, The long-run performance of initial public offerings, *Journal of Finance* 46, 3-48.
- Rock, K., 1986, Why new issues are underpriced, *Journal of Financial Economics* 15, 187-212.
- Sherman, A. E. and S. Titman, 2002, Building the IPO order book: Underpricing and participation limits with costly information, *Journal of Financial Economics* 65, 3-30.

Spiess, D. K. and J. Affleck-Graves, 1995, Underperformance in long-run stock returns following seasoned equity offerings, *Journal of Financial Economics* 38, 243-267.

Tinic, S., 1988, Anatomy of initial public offerings of common stock, *Journal of Finance* 43, 789-822.

**Table I**

<b>Panel A</b>		
<b>Distribution of post-bankruptcy equity offerings by year</b>		
<i>Year</i>	<i>n</i>	<i>%</i>
1986	1	2%
1987	1	2%
1990	4	6%
1991	2	3%
1992	4	6%
1993	5	8%
1994	6	9%
1995	2	3%
1996	9	14%
1997	1	2%
1998	2	3%
1999	1	2%
2000	1	2%
2001	1	2%
2003	4	6%
2004	13	20%
2005	9	14%
	66	100%

<b>Panel B</b>		
<b>Distribution of post-bankruptcy equity offerings by stock exchange</b>		
<i>Exchange</i>	<i>n</i>	<i>%</i>
AMEX	5	8%
NASDAQ	23	35%
NYSE	38	58%
	66	100%

(Continued)

**Table I**  
**(continued)**

<b>Panel C</b>		
<b>Distribution of Post-Bankruptcy Equity Offerings by use of proceeds</b>		
<i>Use of Proceeds</i>	<i>n</i>	<i>%</i>
Acquisition Fin.	4	6%
General Corp. Purposes	19	29%
Pay on LT Borrowings	1	2%
Payment on Borrowings	3	5%
Proceed to Shareholders	1	2%
Project Finance	1	2%
Recapitalization	1	2%
Reduce Indebtedness	1	2%
Refinancing /Retiring Acquisition related Debt	1	2%
Refinancing /Retiring Bank Debt	4	6%
Refinancing /Retiring Fixed Income Debt	3	5%
Refinancing	1	2%
Secondary	15	23%
Working Capital	2	3%
Unknown	9	14%
	66	100%

(continued)

**Table I**  
**(continued)**

**Panel D**

**Distribution of post-bankruptcy equity offerings by industry**

<i>Industry</i>	<i>n</i>	<i>%</i>
Air Transportation, Scheduled	6	9%
Air-Cond & Warm Air Heatg Equip & Common & Indl Refrig Equip	1	2%
Cement, Hydraulic	2	3%
Communications Services, NEC	3	5%
Computer Storage Devices	3	5%
Crude Petroleum & Natural Gas	1	2%
Deep Sea & Foreign Transportation of Freight	1	2%
Drawing & Insulating of Nonferrous Wire	1	2%
Drilling Oil & Gas Wells	3	5%
Fabricated Structural Metal Products	3	5%
Fire, Marine & Casualty Insurance	1	2%
Glass Containers	1	2%
Hospital & Medical Service Plans	1	2%
Hotels & Motels	1	2%
Jewelry, Precious Metal	2	3%
Life Insurance	1	2%
Local & Suburban Transit & Interurban Hwy Passenger Trans	2	3%
Meat Packing Plants	1	2%
Metal Forgings & Stampings	2	3%
Mining Machinery & Equip (No Oil & Gas Field Mach & Equip)	2	3%
Motor Vehicle Parts & Accessories	1	2%
Natural Gas Transmission & Distribution	1	2%
Oil & Gas Field Machinery & Equipment	2	3%
Oil & Gas Field Services, NEC	1	2%
Operative Builders	1	2%
Pharmaceutical Preparations	3	5%
Printing Trades Machinery & Equipment	1	2%
Retail-Department Stores	2	3%
Retail-Grocery Stores	1	2%
Retail-Variety Stores	1	2%
Sausages & Other Prepared Meat Products	1	2%
Services - General Medical & Surgical Hospitals (NEC)	2	3%
Services - Miscellaneous Business Services	1	2%
Services - Motion Picture Theaters	2	3%
Services-Skilled Nursing Care Facilities	1	2%
Steel Works, Blast Furnaces & Rolling Mills (Coke Ovens)	3	5%
Telephone Communications (No Radiotelephone)	1	2%
Wood Household Furniture, (No Upholstered)	3	5%
	66	100%

(continued)



**Table I**  
(continued)

**Panel E**

**Distribution of lead underwriters in post-bankruptcy equity offerings**

<i>Lead Managers</i>	<i>n</i>	<i>%</i>
Alex Brown & Sons Inc	1	1%
BA Securities Inc	1	1%
Banc of America Securities LLC	1	1%
Bear Stearns & Co Inc	4	5%
Citigroup	2	2%
Credit Suisse First Boston Corp	3	4%
CS First Boston Corp	2	2%
DA Davidson & Co Inc	1	1%
Deutsche Bank Securities Corp.	1	1%
First Boston Corp	1	1%
Goldman Sachs & Co	13	15%
Jefferies & Co Inc	1	1%
JP Morgan & Co Inc	3	4%
Lehman Brothers	4	5%
MDB Capital Corp	1	1%
Merrill Lynch & Co Inc	12	14%
Morgan Keegan Inc	1	1%
Morgan Stanley	1	1%
Salomon Brothers Inc	11	13%
Sanders Morris Harris Inc	1	1%
Smith Barney Incorporated	4	5%
Smith Barney, Harris Upham & Co	2	2%
Stephens Inc	2	2%
UBS Investment Bank	5	6%
US Bancorp Piper Jaffray Inc	1	1%
Wertheim Schroder & Co (UK)	1	1%

**Panel F**

**Syndicated versus non-syndicated post-bankruptcy equity offerings**

<i>Syndicated</i>	<i>n</i>	<i>%</i>
No	18	27%
Yes	48	73%
	66	100%

**Panel G**

**Distribution of post-bankruptcy equity offerings by lock-up provisions**

<i>Lock-up Provision</i>	<i>n</i>	<i>%</i>
No	28	42%
Yes	38	58%
	66	100%

The sample of post-bankruptcy equity offerings are from the SDC Global New Issues database from 1986 to 2005. Details of the sample are as reported in SDC. Bankrupt firms are identified in Lynn LoPucki's Bankruptcy Research Database.

**Table II**

**Summary statistics of characteristics of post-bankruptcy equity offerings**

	<i>n</i>	<i>Mean</i>	<i>Median</i>	<i>Std Dev</i>	<i>Minimum</i>	<i>Maximum</i>
Duration (Year)	66	1.75	1.41	1.39	0.08	6.86
Number of years from Ch. 11 emergence to offer	66	3.48	2.20	3.53	0.03	16.80
Offer Price (US\$)	66	18.97	16.38	12.87	1.00	69.00
Proceeds (US\$ Mil)	66	151.47	105.95	199.52	12.50	1428.00
Overallotment amount sold as a % of amount offered	66	7.89	9.39	6.86	0.00	15.00
Number of lead, co-lead & co-managers	66	3.09	3.00	1.70	1.00	9.00
Percent change mid-file price to offer price	66	0.04	-0.02	0.44	-0.49	3.06
Percent gross spread	56	0.05	0.06	0.01	0.01	0.08
Average lead underwriter(s) rating	60	8.58	9.00	0.88	4.86	9.00

The sample of post-bankruptcy equity offerings are from the SDC Global New Issues database from 1986 to 2005. Bankrupt firms are identified in Lynn LoPucki's Bankruptcy Research Database. Related statistics are collected either from SDC or Bankruptcy Research Database.

**Table III**

**First-day underpricing of post-bankruptcy equity offerings**

<i>Underpricing</i>	<i>n</i>	<i>Mean</i>	<i>Median</i>	<i>t value</i>	<i>POS:NEG</i>	<i>Sign M</i>	<i>Signed Rank S</i>
OFFER TO CLOSE	66	4.49%	1.74%	4.43***	16:50	22.5	673
				(p<0.0001)		(p<0.0001)	(p<0.0001)

The sample of post-bankruptcy equity offerings are from the SDC Global New Issues database from 1986 to 2005. Bankrupt firms are identified in Lynn LoPucki's Bankruptcy Research Database. OFFER TO CLOSE is the difference between the offer price and the closing price on the day of the offer. Offer prices are collected from SDC. Trading prices are collected from CRSP. All tests examine whether the sample mean significantly differs from zero.

\*\*\* denotes significance at the 0.01 level.

\*\* denotes significance at the 0.05 level.

\* denotes significance at the 0.10 level.

**Table IV****Comparison of the underpricing of post-bankruptcy equity offerings to traditional IPOs**

<b>Panel A</b>				
<i>Underpricing of:</i>	<i>n</i>	<i>Mean</i>	<i>Median</i>	<i>t value</i>
Post-bankruptcy equity offerings	66	4.49%	1.74%	4.43*** (p<0.0001)
Matching traditional IPOs	66	15.53%	7.04%	6.54*** (p<0.0001)
Difference	66	11.03%	5.30%	4.25*** (p<0.0001)
<b>Panel B</b>				
<i>Underpricing of:</i>	<i>n</i>	<i>Mean</i>	<i>Median</i>	<i>t value</i>
Post-bankruptcy equity offerings	66	4.49%	1.74%	4.43*** (p<0.0001)
Matching traditional IPOs	66	15.80%	5.21%	4.31*** (p<0.0001)
Difference	66	11.31%	3.47%	2.94*** (p=0.0046)

This table compares the underpricing of post-bankruptcy equity offerings with traditional IPOs. In Panel A, the traditional IPO is a matching firm that conducted an equity offering in the same year as the corresponding sample firm and in the same industry. In Panel B, the traditional IPO is a matching firm that conducted an equity offering in the same year as the corresponding sample firm and is closest in size to the sample firm. The sample of post-bankruptcy equity offerings and matching traditional IPOs are from the SDC Global New Issues database from 1986 to 2005. Bankrupt firms are identified in Lynn LoPucki's Bankruptcy Research Database. Underpricing is measured as the difference between the offer price and the closing price on the day of the offer. Offer prices are collected from SDC. Trading prices are collected from CRSP.

\*\*\* denotes significance at the 0.01 level.

\*\* denotes significance at the 0.05 level.

\* denotes significance at the 0.10 level.

**Table V**  
**Cross-sectional analysis of underpricing**

<i>Variables</i>	<i>Estimate</i>	<i>t Value</i>	<i>Pr &gt;  t </i>
Intercept	0.1660	5.870 <sup>***</sup>	<.0001
BANKRUPT	-0.0903	-3.640 <sup>***</sup>	0.0004
OVERPCT	0.0362	0.480	0.6312
NMGR	-0.0133	-1.800 <sup>*</sup>	0.0744
ΔP	0.0657	1.820 <sup>*</sup>	0.0704
HOT	0.1606	2.260 <sup>**</sup>	0.0253
n	132		
R-square	0.1786		
F	5.48		
Pr > F	0.0001		

The sample of 66 post-bankruptcy equity offerings and their matching original IPOs is from the SDC Global New Issues database from 1986 to 2005. A matched original IPO is a matching firm that conducted an IPO in the same year as its corresponding sample firm and is in the same industry and closest in size to the sample firm. Bankrupt firms are identified in Lynn LoPucki's Bankruptcy Research Database. The dependent variable is *UNDERPRICING* and is measured as the difference between the offer price and the closing price on the day of the offer. The independent variables are: (i) a dummy variable to indicate that the equity offering is conducted by a previously bankrupt firm (*BANKRUPT*), (ii) the over-allotment amount sold as a percentage of the deal value (*OVERPCT*); (iii) the number of firms participating in the underwriting process (*NMGR*); (iv) the percentage change from the middle of the original price and the offer price (*ΔP*); and, (v) the hot period (*HOT*). Robust standard errors for OLS regression parameter estimates are used.

\*\*\* denotes significance at the 0.01 level.  
 \*\* denotes significance at the 0.05 level.  
 \* denotes significance at the 0.10 level.

**Table VI****Buy and hold abnormal returns of post-bankruptcy equity offerings**

	<i>n</i>	<i>Mean</i>	<i>Median</i>	<i>t value</i>	<i>POS:NEG</i>	<i>Sign M</i>	<i>Signed Rank S</i>
BHAR 1 MONTH	65	5.10%	3.60%	2.94*** (0.0046)	42:23	9.50** (0.0248)	417.50*** (0.0054)
BHAR 3 MONTHS	62	11.20%	5.04%	2.83*** (0.0063)	37:25	6.00 (0.1619)	342.50** (0.0151)
BHAR 6 MONTHS	58	11.73%	9.91%	2.22** (0.0305)	37:21	8.00** (0.0479)	298.50** (0.0195)
BHAR 12 MONTHS	55	18.55%	21.42%	2.10** (0.0403)	36:19	8.50** (0.0300)	263.00** (0.0262)
BHAR 24 MONTHS	38	33.47%	20.35%	1.98* (0.0558)	22:16	3.00 (0.4177)	91.50 (0.1882)
BHAR 36 MONTHS	32	12.88%	42.31%	0.39 (0.7020)	17:15	1.00 (0.8601)	24.00 (0.6608)

This table shows the Buy and Hold Abnormal Returns (BHARs) of post-bankruptcy equity offerings. A BHAR is simply a holding period return on the sample firm less the holding period return on a matching firm. For each sample firm, the matching firm is the one closest in size and book-to-market, respectively. Both stock prices and the number of shares outstanding are collected from CRSP. A firm's book-to-market ratio is calculated as the ratio of the book value of common equity (COMPUSTAT data item 60) divided by the market value of equity. The sample of post-bankruptcy equity offerings are from the SDC Global New Issues database from 1986 to 2005. Bankrupt firms are identified in Lynn LoPucki's Bankruptcy Research Database.

\*\*\* denotes significance at the 0.01 level.

\*\* denotes significance at the 0.05 level.

\* denotes significance at the 0.10 level.

**Table VII**  
**Buy and hold abnormal returns of post-bankruptcy equity offerings**

	<i>n</i>	<i>Mean</i>	<i>Median</i>	<i>t value</i>	<i>POS:NEG</i>	<i>Sign M</i>	<i>Signed Rank S</i>
BHAR 1 MONTH	65	5.53%	5.07%	3.25*** (0.0018)	45:20	12.50*** (0.0026)	446.50*** (0.0028)
BHAR 3 MONTHS	62	8.15%	4.78%	1.98* (0.0519)	35:27	4.00 (0.3742)	236.50* (0.0976)
BHAR 6 MONTHS	58	7.21%	-1.05%	1.28 (0.2062)	28:30	-1.00 (0.8957)	160.50 (0.2169)
BHAR 12 MONTHS	55	13.52%	14.21%	1.53 (0.1310)	32:23	4.50 (0.2806)	155.00 (0.1967)
BHAR 24 MONTHS	38	23.00%	-2.73%	1.48 (0.1466)	17:21	-2.00 (0.6271)	48.50 (0.4892)
BHAR 36 MONTHS	32	48.64%	25.08%	2.16** (0.0383)	23:9	7.00** (0.0201)	130.00** (0.0126)

This table shows the Buy and Hold Abnormal Returns (BHARs) of post-bankruptcy equity offerings. A BHAR is simply a holding period return on the sample firm less the holding period return on a matching firm. For each sample firm, the matching firm is the one closest in size with the same SIC code as the sample firm. Size is calculated as the stock price *times* the number of shares outstanding. Both stock prices and the number of shares outstanding are collected from CRSP. The sample of post-bankruptcy equity offerings are from the SDC Global New Issues database from 1986 to 2005. Bankrupt firms are identified in Lynn LoPucki's Bankruptcy Research Database.

- \*\*\* denotes significance at the 0.01 level.
- \*\* denotes significance at the 0.05 level.
- \* denotes significance at the 0.10 level.

**Table VIII**  
**Long-run abnormal returns using Fama-French calendar-time model**

	<i>Estimate</i>	<i>OLS t value</i>		<i>Heteroscedasticity consistent t value</i>	
Intercept (Abnormal Return)	-0.0003	-0.52		-0.52	
b(p)	1.4275	19.15	***	14.63	***
s(p)	0.6353	6.29	***	3.49	***
h(p)	1.1771	8.65	***	5.77	***
R-squared	0.0921				

This table shows the results from applying the three-factor model as developed by Fama and French (1993). The three-factor model is applied by regressing the 253 post-event daily excess returns for firm *i* on a market factor [b(p)], a size factor [s(p)], and a book-to-market factor [h(p)] as explained in Fama and French (1993). To calculate the excess return, the three-month Treasury Bills are used. The intercept represents the mean daily abnormal return over the 253 days starting one day after the equity offering for the sample of 66 post-bankruptcy equity offerings.

- \*\*\* denotes significance at the 0.01 level.
- \*\* denotes significance at the 0.05 level.
- \* denotes significance at the 0.10 level.

**Table IX****Comparison of post-issuance risk profile of post-bankruptcy equity offering to alternative benchmarks**

<b>Panel A</b>						
<i>The standard deviations of daily returns of:</i>	<i>n</i>	<i>Mean</i>	<i>Median</i>	<i>t Value</i>	<i>Pr &gt;  t </i>	
Post-bankruptcy equity offerings (PBEO)	66	2.87%	2.69%***	16.14	<.0001	
IPOs matched by size	66	3.71%	2.99%***	12.04	<.0001	
IPOs matched by industry and size	66	3.64%	3.54%***	24.07	<.0001	
CRSP Value Weighted Market Index	66	0.74%	0.68%***	22.00	<.0001	
CRSP Equally Weighted Market Index	66	0.60%	0.57%***	24.56	<.0001	

  

<b>Panel B</b>						
<i>The differences in standard deviations of daily returns of:</i>	<i>n</i>	<i>Mean</i>	<i>Median</i>	<i>t Value</i>	<i>Sign M</i>	<i>Signed Rank S</i>
PBEO – IPOs matched by size	66	-0.84%	-0.63%	-4.15	-15	-622.5
				(<.0001)	(0.0003)	(<.0001)
PBEO – IPOs matched by industry and size	66	-0.77%	-0.94%	-3.64	-14	-640.5
				(0.0005)	(0.0008)	(<.0001)
PBEO – CRSP Value Weighted Market Index	66	2.13%	1.86%	13.13	33	1105.5
				(<.0001)	(<.0001)	(<.0001)
PBEO – CRSP Equally Weighted Market Index	66	2.27%	2.00%	13.54	33	1105.5
				(<.0001)	(<.0001)	(<.0001)

This table shows the risk profile of post-bankruptcy equity offerings and benchmarks over the 252 days starting 1 day after the issue. Risk is measured as the standard deviation of the daily returns. Returns data are collected from CRSP. The first benchmark consists of IPOs matched by offer year and size. The second benchmark consists of IPOs matched by offer year, SIC codes and size. The third benchmark is the CRSP Value Weighted Market Index. The fourth benchmark is the CRSP Equally Weighted Market Index.

\*\*\* denotes significance at the 0.01 level.

\*\* denotes significance at the 0.05 level.

\* denotes significance at the 0.10 level.

