Do Investment Banks Matter?
The Impact of the Loss of an Underwriter on Newly Public Firms

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The recent financial crisis provides a natural experiment to understand investment banks' underwriting function. On the day of their equity underwriter's near failure, stock prices of clients of Bear Stearns, Lehman, Merrill or Wachovia fell by more than 5%, on average. This decline was more than 1% lower than the conditional return predicted by a market model (abnormal return of more than -1%), a destruction of equity value of almost $3 billion. The price impact was worse for companies with greater levels of opacity and fewer monitors, suggesting that underwriters play an important role in information production or monitoring of newly public companies. I find no evidence that the abnormal price decrease was related to underwriters' role as market maker or lender.

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I. Introduction

Immediately prior to Lehman Brother's bankruptcy filing in September of 2008, *Wall Street Journal*'s Deal Journal proposed that "…Lehman Brothers Doesn't Matter Anymore."[1] Unlike the *Wall Street Journal*'s proposition, this study finds that investment banks still matter to their equity underwriting clients. Excess returns of the clients of Bear Stearns, Lehman Brothers, Merrill Lynch and Wachovia were more than 1% lower during the period when it appeared that their initial public offering (IPO) underwriters might collapse. This negative excess return represents $3 billion in lost equity value, on average, and more than 20% of the initial total underwriting spread.

The negative effect of IPO underwriter failure on client firms is related to the importance of underwriter monitoring. Companies for whom underwriter information production is less important, that is, companies with less opaque operations or with other monitors, outperform. In addition, companies that are equity dependent were most affected by their underwriter's failure.

An alternative explanation for the estimated negative abnormal returns is that underwriters provide other valuable post-IPO services to their clients. I did not find any evidence for this alternative explanation. When the underwriter was a market maker, clients' event day excess performance was actually better. Event day excess returns were not significantly worse for underwriting clients whose underwriter was a lender. Finally, performance was not significantly worse for clients' whose shares were held by asset management affiliates of the underwriter.

After the event days when it appeared that Bear Stearns, Lehman Brothers, Merrill Lynch and Wachovia might cease operations, each underwriter was acquired and

[1] http://blogs.wsj.com/deals/2008/09/10/mean-street-why-lehman-brothers-doesnt-matter-anymore/

their underwriting business continued. In response to the resolution of the underwriters' distress, client firms gained 1.6% on average. If investors had reassessed the underwriters' clients' quality due to the underwriters' distress, the post-event return would not have been positive. The positive post event return also supports the assumption that the events were exogenous to the banks' underwriting business.

This paper adds to the literature on the role of investment banks as financial intermediaries in the initial public offering process. It provides an empirical estimate of the importance of equity underwriters and post-IPO monitoring. In addition, it sheds light on the analysis of the financial crisis, looking at the potential impact of weakness in the investment banking industry. The analysis also has implications for companies selecting an underwriter – IPO clients should consider the financial strength of their underwriter, not just the underwriter's underwriting capabilities.

The paper proceeds as follows. I present the literature and empirical predictions in Section II. Section III describes the data and empirical strategy and Section IV presents the empirical findings. Section V concludes.

II. Literature and Empirical Predictions

A. Investment Banks as Monitors

This paper is similar in spirit to the literature which seeks to quantify the importance of banks as financial intermediaries by measuring the impact on clients of exogenous bank failures. For example, Slovin, Sushka and Polonchek (1993) found an average excess return of -4.2% on the stock prices of its lending clients during the impending insolvency of the Continental Illinois bank. More recently Ashcraft (2005)

estimated the impact on local activity of the failure of healthy subsidiaries of a multi-bank holding company. Similarly, if underwriters are monitors and producers of information about their post-IPO clients, their clients' equity prices should fall when the underwriter is in distress.

Just as banks are expected to monitor their borrowers, academic studies highlight the importance of the equity underwriter in certifying and monitoring, especially for initial public offerings. Easterbrook described the importance of underwriter monitoring of the manager-stockholder conflict, "When it issues new securities, the Company's affairs will be reviewed by an investment banker or some similar intermediary…" (Easterbrook (1984, p. 654)). Beatty and Ritter (1986) and Carter and Manaster (1990) show that that investment banks execute their certification role because they want to protect their reputation capital. Hansen and Torregrosa (1992) present a theory in which underwriter monitoring raises share prices to a new level that is certifiable. This theory proposes that banks receive rents from their reputations for monitoring, and that banks continue to monitor since shirking would be unlikely to result in gains that offset the losses to reputational capital. They present only indirect evidence that underwriting syndicates monitor corporate managers by finding that spreads are lower when management ownership is higher. Jain and Kini (1999) conclude that there is demand for third party monitoring in the IPO market and find a positive relationship between investment bank reputation and post-issue performance. However this empirical evidence for the provision of post-IPO monitoring by underwriters is subject to concerns about endogeneity of company characteristics and underwriter selection, which might

produce the observed relationships between underwriter reputation, stock performance and risk.

Additionally, the mechanism for this monitoring is unclear. Researchers have turned a critical eye on the role of analysts affiliated with the underwriting bank. Das, Guo and Zhang (2006) find that IPOs with high coverage from non-affiliated analysts outperform relative to those with low residual coverage. Fang and Yasuda (2008) find that the severity of conflict of interest has a negative effect on the performance of lower ranked analysts, regardless of bank reputation. These past findings implicitly question the value of underwriter monitoring, to the extent that underwriter monitoring is supplied by affiliated analysts. If monitoring is performed by affiliated analysts, the probability of this monitoring continuing may be a function of the skill of the analyst. If an analyst follows a company, they may continue to do so, even if no longer employed by the original underwriter. In this case, some information would be continued to be produced, even if the initial investment banking group was no longer intact.

B. Empirical Predictions and Alternatives

The analysis first examines the equity valuation impact of an exogenous potential failure of the equity underwriter. If the underwriter plays no role in monitoring or producing information about the post-IPO operations of its clients, there should be no impact on the equity price in excess of the market. In contrast, if the underwriter plays an important role, the stock price of the company should fall.

The finding of a negative excess return is necessary but not sufficient evidence to support the importance of monitoring by the underwriter. While the theoretical literature

posits the importance of underwriter monitoring, the underwriter may also be acting as a lender, a market maker or as an investor in its clients. I first present a monitoring or information based explanation for the observed negative return, and then present three alternative hypotheses based on other underwriter functions and one alternative hypothesis based on investor updating on quality.

A monitoring or information-based explanation for the importance of the underwriter results in the following predictions:

Prediction 1a: *Companies for whom information production is important (more opaque operations or fewer monitors/ producers of information) will be the most negatively affected by the failure of their underwriter.*

Prediction 1b: *Companies which are the most equity dependent will be the most negatively affected by the failure of their underwriter.*

The first alternative to underwriting monitoring is that the underwriter is serving as a lender to its underwriting clients. After the repeal of the Glass-Steagall Act reduced legal barriers to commercial and investment banking, it has became more common for the underwriter to also serve as the newly public company's lender. Drucker and Puri (2005) find that loan underwriting increases the probability of getting future advisory business, primarily for commercial banks. It unlikely that traditional investment banks were selected as equity underwriters based on their previous lending relationships with the sample companies. However, if a company's underwriter is also their primary lender, the

observed result may reflect the impact of potentially reduced access to credit documented by Slovin, Sushka and Polonchek (1993). A lending explanation predicts:

Alternative 1: *Companies whose underwriter is their primary lender will be the most negatively affected by the failure of their underwriter.*

The second alternative explanation is that the underwriter is serving as a market maker to its clients. Ellis, Michaely and O'Hara (2000) present evidence on the first few months post-IPO and find that the lead underwriter always becomes a market maker and usually takes a substantial inventory position in the stock.[2] However, they find that price support lasts only throughout the 20th day post-trading. A market making explanation results in the following prediction:

Alternative 2: *Companies whose underwriter is a post-IPO market maker will be the most negatively affected by the failure of their underwriter.*

Finally, the underwriters' affiliated asset management division may invest directly in the company. If these divisions are forced to liquidate shares because of the underwriter's distress, the additional supply of shares may depress prices. This price effect may be generated either by the actual sale of shares by the underwriter, or the fear of other investors of subsequent liquidation. While this explanation is based on the direct impact of the underwriter as an investor, it does not preclude a monitoring explanation.

[2] Ellis, Michaely and O'Hara (2000) also detail the importance of the overallotment option and price stabilization. The overallotment option is only exercisable in the 30 days after the IPO and thus not relevant to this analysis.

Affiliated divisions may invest because of a lower marginal cost of information production due the banks' ongoing information production about the client post-IPO. An investing explanation results in the following prediction:

Alternative 3: *Companies whose underwriters are stockholders will be the most negatively affected by the failure of their underwriter.*

A final alternative hypothesis to explain the abnormally low event day returns is ex post updating on the quality of the underwriter's certification by investors. If an underwriter's failure caused investors to update negatively on the value of the pre-IPO information production and certification process, sample companies will have negative event day abnormal returns even if the underwriter does nothing post-IPO.

For example, if an investor viewed Bear Stearns' financial difficulties created by its subprime mortgage exposure to be symptomatic of systematically poor decision making at Bear Stearns, the investor might reevaluate the certification provided by Bear Stearns on its IPOs. The power of this event study is predicated on the negative event (the underwriter's failure) not being informative about the quality of the newly public company. If the underwriter's failure led investors to update on the quality of its underwriting, this reassessment of the underwriters' clients should be permanent. If, instead, the negative abnormal return is due to concern about the continuation of the post-IPO functions of the underwriter, the post event abnormal return should be positive when uncertainty about the underwriter is resolved. This leads to the prediction:

Alternative 4: *If underwriters' failures lead investors to update on the quality of underwriters' clients, post-event event returns should be unaffected by the news that the banks' underwriting activities will continue.*

III. Data

A. Sample

The sample of initial public offerings is collected from Securities Data Corporation's (SDC) New Issues Database. It includes all companies which listed Bear, Stearns, Lehman Brothers, Merrill Lynch or Wachovia as their Book or Co-Manager since January 1, 2004. It excludes public offerings of financial products (defined as offerings in SIC code 6726 Unit Investment Trusts, Face-Amount Certificate Offices and Closed-End Management Investment Offices and SIC code 6798 Real Estate Investment Trusts). This totals 104 IPOs for Lehman, 27 for Bear Stearns, 20 for Wachovia and 117 for Merrill Lynch. 51% of the companies trade on NASDAQ and 45% on the NYSE. The remaining 4% trade on the AMEX. I also create a comparison IPO index portfolio, of companies that had initial public offerings since January 1, 2004, but did not have Bear, Stearns, Lehman Brothers, Merrill Lynch or Wachovia as their Book or Co-Manager. I exclude all of the sample companies from this index as well as public offerings of financial products (defined as offerings in SIC code 6726 Unit Investment Trusts, Face-Amount Certificate Offices and Closed-End Management Investment Offices and SIC code 6798 Real Estate Investment Trusts).

Data on prices, trading volume and shares outstanding are from the Center for Research in Security Prices (CRSP). Accounting variables are from the COMPUSTAT Industrial Annual or Quarterly data file.

Table 1 presents summary statistics for the sample and the IPO Index portfolio. Sample companies have been public for over 2 years on average. Like other newly public companies, companies in the sample are relatively small, with mean (median) sales of $1,023 ($325) million and assets of $2,207 ($747) million. Debt levels are low relative to the average NASDAQ company, with median leverage of 30%, although higher than the IPO index. The most represented industries were Business Services (SIC code 73), followed by Chemicals and Allied Products (SIC code 28) and Electronic and other Electrical Equipment and Components (SIC code 36).

Jain and Kini (1999) find that clients of higher ranked underwriters have better post-IPO returns. The four banks studied were relatively highly ranked in equity underwriting, thus the sample may be expected to be of slightly higher quality than a random sample of IPOs.[3] To the extent that the sample companies are of higher quality than other newly public companies, that would bias against finding any negative abnormal returns. Regardless, the valuation (measured by the book to market or price to earnings ratios) of the sample companies is not significantly different from the other companies in the IPO index.

[3] The Carter-Manaster rank in equity underwriting for 1992-2000 as calculated by Loughlin and Ritter (2004) was 8.1 for Bear Stearns and Lehman, 9.1 for Merrill Lynch and 7.1 for Wachovia. The ranking for the 1992 to 2000 period is based on the 1999 Goldman Sachs prospectus as well as subjective ratings by Bruce Foerster of South Beach Capital.

B. Event dates

I identify four separate bank events, collectively referred to as "failures." Of course each event subsequently resulted in very different outcomes for the relevant investment banks and their employees. However, in each case the event date may be understood as a day in which there was substantial market uncertainty about the probability that the bank would be in business the next day. The event dates, $t = 0$, are as follows:

1) Bear Stearns, March 14th, 2008 – Bear Stearns announces $30 billion in funding provided by JP Morgan and the Federal Reserve. The firm is acquired the next trading day by JP Morgan for $2 a share, representing just over 1 percent of the firm's value at its record high close 14 months earlier.
2) Lehman Brothers, September 15th, 2008 – Lehman Brothers files for bankruptcy after failing to find a merger partner.
3) Merrill Lynch, September 15th, 2008 – As Lehman Brothers goes bankrupt, Merrill Lynch accepts an offer from Bank of America
4) Wachovia, September 29th, 2008 – Citigroup announces an agreement brokered by the FDIC to acquire most of Wachovia. The FDIC describes the transaction as "Not a failure." The following month, Wachovia is acquired by Wells Fargo.

C. Methodology

I calculate daily abnormal (excess) returns for each company using market model methodology. The abnormal returns are the difference between the actual return and conditional expected return obtained from a least squares regression estimated over a 40

day prevent period t = -45 through -5. Because the relevant events occurred suddenly, but around a period of dislocation in the capital markets, I do not use days -1 through -4 in calculating the estimation period. The null hypothesis for the initial statistical test is that the abnormal return is equal to zero. Abnormal returns are calculated only on the day of the underwriter failure (t = 0), although the analysis is robust to a longer event window. The analysis is also robust to longer definitions of the estimation period, although the estimation period is necessarily limited by the fact that the companies of interest are newly public. The basic specification is:

$$AR_{i,t} = \alpha + \varepsilon_{i,t}$$

Where $AR_{i,t}$ is the abnormal return of company i at the event date t and α measures the extent of the underperformance.

Since performance tests are joint tests of the null hypotheses of no abnormal performance and the pricing model (Fama (1976)), the conditional expected return is estimated relative to several possible measures of market performance, including broad based market measures as well as measures which match the characteristics of the sample companies more carefully. In addition to the standard market measures (S&P 500, Nasdaq value weighted composite index and NYSE/AMEX value weighted index (all including dividends)), I construct several portfolios to match more closely the characteristics of the sample companies: i) 25 size and book to market quintile matched portfolios, ii) 2-digit SIC code matched portfolios, and iii) a portfolio of newly public companies.

I include a comparison index of book-to-market and size quintile matched companies, because Brav and Gompers (1997) provide evidence that IPOs are likely to be

smaller and lower book-to-market than the overall market. To construct these 25 matched portfolios, I use all NYSE stocks to create size quintile breakpoints with an equal number of firms in each quintile. Size is measured as the number of shares outstanding times the stock price at the end of the quarter preceding the event date. Accounting measures are from the COMPUSTAT quarterly and annual files and define book value as book common equity plus balance sheet deferred taxes and investment tax credits for the fiscal quarter ending two quarters before the event date similar to Fama and French (1992).[4] Within each size quintile I form five book-to-market portfolios with an equal number of NYSE firms. [5]

In addition to differences in size and valuation, it is possible that the industry composition of the sample companies may be different from that of the overall market. Differences in industry concentration may reflect the standard differences in IPO industry composition relative to the overall market, or differences in industry focus at the four investment banks in the sample. I construct portfolios based on all of the companies in the CRSP universe that are in the same 2-digit SIC code. This allows for a more precise definition of industry than the 49 industry portfolios considered by Fama and French (1997).

Finally, I include the IPO index portfolio, a control portfolio comprised of recently public companies who were not clients of the troubled underwriters. Young companies are an important reference point because the banks' failures impacted financial markets and liquidity. Matching sample firms to newly public firms can thus effectively control for events that affect the returns of all newly public companies. Using a portfolio

[4] If the book value is missing I substitute the most recent annual value.
[5] This adaption of the Fama and French (1992) methodology follows that of Brav and Gompers (1997).

of newly public companies as a benchmark will prevent any spurious findings that reflect the impact of the collapse of market liquidity rather than the underwriters' failure. In addition, these newly public companies are not significantly different from the sample companies, as measured by mean book-to-market ratios and equity market values. Of course, if there was uncertainty at the same time as the event dates about the underwriters of these newly public companies, prices of this index may also decline, making the analysis less likely to estimate negative abnormal returns.

IV. Empirical Findings

A. Abnormal event date returns

I first test the basic question – does the price of newly public companies fall on the day that it is revealed that their underwriter may cease operation? Figure 1 shows the mean daily returns of the companies in the sample with dates relative to event day equal to 0. The average event day return is a decline of more than 5%. Table 2 tabulates these statistics for the sample companies and seven possible market measures. The sample companies' mean daily return ranges from 0.3% to 1% lower than the return of the benchmark indexes on the event date. NASDAQ and an index of recent IPOs outperform the NYSE Composite, perhaps because many of the large banks are included in the NYSE Composite.

The negative event date returns are not driven by severe underperformance of a single underwriter. Figure 2 decomposes the mean daily returns of the companies in the sample by underwriter relative to event time. All have negative event date returns. Bear

Stearns' clients underperformed the least in absolute terms, although the overall market decline on that date was also the least extreme.

The remaining analysis consider only abnormal returns, the difference between the actual return and conditional expected return calculated relative to various possible reference portfolios. Table 3 tabulates the event date abnormal returns by underwriter. On average and at the median, the sample companies had lower returns than most of the different benchmarks. Unsurprisingly, Lehman-underwritten companies underperformed the most, perhaps because Lehman's failure was unconditionally the worst.

Figure 3 presents daily abnormal returns graphically relative to the NASDAQ, IPO Index, and the size and book to market matched portfolio. Table 4 shows the abnormal returns of the sample companies relative to the following reference portfolios: i) S&P 500 Index, ii) NASDAQ, iii) NYSE, iv) CRSP, v) size and book-to-market matched portfolios, vi) IPO index and vii) SIC-code matched portfolios. In each case, the estimated constant measure of abnormal return, α, is negative. Estimates for the abnormal return for the sample companies are statistically significant and estimate a destruction of equity value ranging from -1.8% to -0.6%. Using the IPO Index as the reference portfolio, this specification implies excess value destruction of $13 million for a company of the mean equity value, a total value destruction of more than $3 billion on average for the 268 newly public sample companies.

B. Difference-in-differences

I next exploit differences within the sample to understand why newly public companies' stock prices fall when their underwriter goes away.

The equation estimated becomes:

$$AR_{i,t} = \alpha + \beta X_{i,t-1} + \varepsilon_{i,t}$$

Where $AR_{i,t}$ is the abnormal return around the underwriter failure, α is the fixed effect of the failure on the full sample and $X_{i,t-1}$ is a proxy for the characteristic of interest from the accounting period immediately prior to the event date. The difference-in-difference estimations in the remainder of the paper present abnormal returns calculated relative to the IPO index and the NASDAQ index. The portfolio of newly public companies represents the most comparable reference portfolio, since it is comprised of companies similarly affected by the market-wide decline in liquidity and with similar size and book to market value characteristics. The NASDAQ composite is selected because of all the possible broad market benchmarks it is more likely to have smaller and newly public companies similar to our sample. Results are similar if other benchmark portfolios are used.

C. Information Production and Monitoring

In order to test Prediction 1a, I first calculate several proxies for information. This includes measures of both the opacity of the company's operations and the relative importance of the underwriter in producing information or monitoring the company. The following table summarizes the measures and the predicted relationship with abnormal returns (summary statistics for the measures are presented in Table 5):

Information Proxy	**Sign**
Amount of asymmetric information:	
1. Log days since IPO (*LISSUETIME*)	+
Dispersion of IBES analyst estimates:	
2. SD of FY+1 EPS Estimates$_t$ (*SD_FY1*)	-
3. SD of FY+2 EPS Estimates$_t$ (*SD_FY2*)	-
Importance of underwriter to information production / monitoring:	
4. Number of book underwriters (*BOOK_N*)	+
5. Log number of equity analysts (*LNUMANALYST*)	+
6. Difference between underwriter affiliated analyst estimate and other analyst estimates (*UDIFF)*	-
Institutional block holders:	
7. Percentage held by institutions (*PINSTITUTION*)	+
8. Mean percentage held by blockholders (*PBLOCKS*)	+
9. Presence of other intermediaries (*VCFIRM*)	+

The first information measure is the log of days since IPO *(LISSUETIME)*. The longer the time since IPO, the longer the company's public reporting history and the more information should be available about a company. Older companies have also had more time to develop and communicate with an investor base. Thus I predict a positive relationship between *LISSUETIME* and abnormal returns. The next two measures are the standard deviation of all I/B/E/S analyst estimates one and two year forward earnings estimates measured as of the event date (*SD_FY1* and *SD_FY2*). The mean standard deviation of I/B/E/S EPS estimates was 0.2115 and 0.2530 for 1 year and 2 year forward estimates, respectively. D'Mello and Ferris (2000) propose that when analysts' estimates diverge, a likely reason is that earnings for that company are difficult to estimate. Higher standard deviations of earnings estimates should indicate more opaque companies and thus I predict a negative coefficient.

The remaining information measures capture the relative importance of the underwriter in information production or monitoring the company. The first measure is the number of book underwriters, which is the total number of book underwriters

according to SDC (*BOOK_N*). On average, each company has slightly more than two underwriters. Each member of the equity underwriting syndicate represents an additional source of monitoring and external information production. Thus I expect a positive coefficient on *BOOK_N*.

If underwriter-affiliated analyst coverage of the company is the source of monitoring, other analyst coverage may serve the same purpose. On average, each company has five research analysts. More analysts should mean more information production and more monitoring. Thus I predict higher returns (a positive coefficient) for the log of 1 plus the number of equity analysts with estimates for the company on I/B/E/S *(LNUMANALYST)*.

To measure the uniqueness of the underwriter-affiliated analyst's opinion, I calculate the difference between the 1 year forward underwriter-affiliated analyst estimate and the mean of other analyst estimates (*UDIFF)*. On average, the affiliated analyst has a 1 year forward EPS estimate that is 3 cents higher than the mean of all other analysts, although the median difference is zero. If the affiliated analyst had the most positive news about a company, than the stock price reaction to the underwriter's failure will be worse (negative coefficient on *UDIFF*).

Investment banks and affiliated analysts are not the only monitors of public companies. Investors also produce information about companies in which they invest. This leads to two other proxies for information. First, institutional stockholders may invest more in information acquisition, since they tend to hold larger blocks of stock and thus can spread their costs over a larger investment. Market microstructure research suggests that institutional holders are indeed informed traders (Seppi (1992), Hessel and

Norman (1992), Lang and McNichols (1997)). Second, if there are large blockholders or high percentages of management ownership, agency problems may be lower and the company may require less monitoring. I use the CDA Spectrum Institutional Holdings database to gather information on institutional and blockholder ownership. I calculate the percentage of shares outstanding held by institutions by summing the number of shares held by institutions as of the quarter prior to the event date and divide by the total number of shares outstanding as of the quarter prior to the event date. I calculate the mean block size of institutions and block holders (13D filers) by calculating the mean of the percentage of shares held by each blockholder (*PBLOCKS*). I predict a positive coefficient on both measures.

Brav and Gompers (1997) note that another important financial intermediary for newly public companies is their venture capital investor. Venture capitalists may have reputation concerns that lead them to continue to monitor the company post-IPO, and they may continue to serve on the board of directors. I create a dummy variable equal to 1 when SDC's IPO database indicates that a company was venture-backed. I predict a positive coefficient for the VC-backed dummy (*VCFIRM*).

Tables 6 and 7 show the results of specifications testing the relationship between these information proxies and event day abnormal returns. The dependent variable in Table 6 is the abnormal return calculated relative to the conditional expected return based on the IPO Index and the dependent variable in Table 7 is the abnormal return calculated relative to a benchmark of the NASDAQ. The results of the estimations are similar, regardless of the benchmark portfolio.

The analysis is supportive of Prediction 1a, with the sign of the coefficient for every information proxy tested is as predicted, except for days since IPO. As shown in Tables 6 and 7, as expected, the event day abnormal return is more negative when the amount of information asymmetry is higher, for example when analysts' estimates for the company are more dispersed. The event day abnormal return is higher when there are more information providers, for example when: i) The number of other book underwriters is higher, ii) More analysts cover the company, iii) the underwriter is not the only analyst, iv) the underwriter earnings estimate is not significantly higher than other analysts estimates and vii.) shareholders are institutions and larger blockholders. The lack of statistical significance for some of the coefficients may reflect the relative lack of power given the limited number of observations or the imprecision of the information proxies.

The coefficients on institutional and blockholder ownership are positive and statistically significant. A one standard deviation increase in institutional ownership mitigates the expected 3 percent event day abnormal stock price decline by almost 1 percent. Similarly, a one standard deviation increase in block size mitigates the abnormal decline by more than 0.5 percent (see specifications 6 and 7 of Table 6). The importance of institutional shareholders and blockholders has three interpretations. First, institutional shareholders may actively monitor the company and reduce agency problems through activist shareholding or reduction of agency conflicts. Second, institutional shareholders may produce information that is dispersed to the market, reducing the relative importance of the underwriter. Third, institutional shareholders may do their own monitoring produce more of their own information and thus be indifferent to the loss of the information produced by the underwriter. Finally, institutional shareholders may be

more likely to be long term investors and thus be less likely to sell into a sudden overall market decline.

D. Equity Dependent Firms

The events studied coincide with a dramatic decrease in reduced financial market prices and liquidity. The underwriter's soft information is particularly important to companies that are equity dependent and likely to seek to access the capital markets. I construct an index of equity dependence based on Kaplan and Zingales (1997) as calculated by Lamont, Polk and Saa-Requejo (2001). Baker, Wurgler and Stein find that firms that rank higher in this index have investment that is more sensitive to stock prices (although they exclude Q from the index given the nature of their tests). The equity dependence measure is:

$$KZ_{it} = 1.002 \times \frac{CF_{it}}{A_{it-1}} - 39.367 \times \frac{DIV_{it}}{A_{it-1}} - 1.315 \times \frac{C_{it}}{A_{it-1}} + 3.139 \times LEV_{it} + 0.283 \times Q_{it}$$

where CF_{it}/A_{it-1} is cash flow (the sum of OIBDPQ for the 12 months trailing the event date) over lagged assets (ATQ); DIV_{it}/A_{it-1} is cash dividends (DV) over assets; C_{it}/A_{it-1} is cash balances (CHEQ) over assets; LEV_{it} is leverage ((DLCQ+DLTTQ)/assets); and Q is the market value of equity (price (PRCCQ) times shares outstanding (CSHOQ)) plus assets minus the book value of equity (SEQQ +TXDITCQ-PSTKQ) all over assets. Items are calculated as of the fiscal quarter ended prior to the event date.

The newly public firms in the sample have a mean (median) KZ index of 0.40 (0.50), which is lower than the mean (median) KZ index of the IPO Index companies of 1.23 (0.80). As expected, both levels are higher than the mean of -0.15 Lamont, Polk and Saa-Requejo estimate in a comprehensive sample from 1968 to 1995. Since it is likely

that the relationship between KZ level and stock price is not linear, especially within the relatively narrow ranges in this sample, I divide the sample into three parts and estimate the relationship using a dummy variable equal to 1 if the company is in the middle or top third of the KZ Index.

As expected, the evidence in Tables 8 and 9 supports Prediction 1b – companies which are more equity dependent have lower CARs. The observed event day underperformance comes disproportionately from companies which are more equity dependent. Companies which are most likely to depend on equity financing experience the largest declines in equity value upon the failure of their underwriter.

One component of the KZ Index that appears to be driving the results is the cash to capital ratio. Companies with the most cash on hand are the least affected by the failure of their underwriter, perhaps because they have ample liquidity to invest.

Another important component of the KZ Index is the debt to capital level. Companies with more debt underperform. This result is surprising, since debt holders may serve as an additional source of monitoring. However, another explanation is suggested by Bharath, Dahiya, Saunders and Srinivasan (2007) who find that lenders are likely to be chosen to provide underwriting services. Thus perhaps the real effect of the bank's failure is that of the lender's failure. This effect is considered in the next section.

D. Lending

I test for the importance of the underwriter as lender two ways. The first and third specifications of Table 10 estimate the coefficient on a dummy variable equal to 1 if the company has no debt. If the company has no debt, it has no lenders, and I can be sure

that the underwriter is not a lender. The coefficient on this dummy is positive, but very small and not statistically significant. Companies with no debt still experienced negative abnormal returns when their underwriter failed.

A company with no debt outstanding may still be exposed to the underwriter as a lender if the underwriter is a provider of an undrawn revolver. Therefore I use the Capital IQ database to identify all instances where the underwriter is a lender, regardless of if the loan is drawn. The Capital IQ database accesses companies' 10-K filings and directly identifies the names of all of the lenders to a company. Of 224 companies matched to Capital IQ data on bank lenders, 15 companies (7%) had the underwriter as a lender.[6] Specifications 2 and 4 of Table 10 add a dummy variable equal to 1 if the underwriter was one of the company's lenders. There is no evidence to support Alternative 2, that companies whose underwriters were their lenders underperform.

E. Market Making

Ellis, Michaely and O'Hara (2000) document that underwriters act as market makers in the month following an initial public offering, and document that price support lasts only through the 20th day post-trading. Thus the investment banks should not have been providing price support for the companies in this sample at the time of their failures. Only one company in the sample was taken public fewer than 60 days prior to the relevant event date. After the immediate post-IPO period, the underwriter does not

[6] Capital IQ lender data is not available on a time series basis. The results here identify lenders as of May 21, 2008, based on data from the company's most recent 10-K filing. It is possible that if a company renegotiated its bank loan subsequent to the event date that a company with an underwriter as a lender as of the event date may be incorrectly identified. Expanding the definition of lender to include the ultimate acquirer of the underwriter (i.e. Companies underwritten by Bear Stearns where JP Morgan is a lender will now be equal to 1) results in 14% of the database having the underwriter as lender, but does not change the results.

necessarily act as a market maker. For example, while Innophos' IPO was lead underwritten by Credit Suisse, Bear Stearns and UBS, only Credit Suisse and UBS were among the top three market makers in the stock by 2008.[7] Unfortunately, the detailed trading information Ellis, Michaely and O'Hara used is not widely available.

The NASTRAQ database provides detailed quote information for all stocks traded on the NASDAQ market. Using a random sample of one day of NASTRAQ quote data from December 1, 2007,[8] I follow Huang (2002) in omitting the following trades and quotes to minimize data errors: quotes with an ask price or bid price less than or equal to zero; quotes with an ask size or bid size less than or equal to zero; quotes with bid-ask spreads greater than $5 or less than zero; quotes associated with trading halts or designated order imbalances; before-the-open and after the-close trades and quotes; trades and quotes involving errors or corrections; trades with price or volume less than or equal to zero; ask quote, at, if $|(a_t - a_{t-1}) / a_{t-1}| > 0.50$; and bid quote, b_t, if $|(b_t - b_{t-1})/b_{t-1}| > 0.50$. When there are multiple quotes at the same second according to the time stamp I form the prevailing quote for each dealer by taking the highest bid and the lowest offer. I use the quote data to construct two measures of the underwriter's importance as a market maker.

The first measure is a dummy variable equity to 1 if the underwriter had an inside quote. This would be equal to 1 is the underwriter had the highest bid or the lowest ask at any point in the day. The mean number of companies for which the underwriter had any inside quote was only 6%. The second measure is the aggregate dollar volume of the underwriter's quotes in a day (the sum of all the ask quotes plus the sum of all the bid

[7] Credit Suisse (20%), UBS (15%) and Morgan Stanley (8.4%) were the top 3 market makers in IPHS from IPO to 4/08.
[8] The results are robust to selecting a different day to estimate these measures.

quotes). The mean bid on that day was only $2,895 and the mean ask was only $3,298. These summary statistics confirm the anecdotal evidence that these underwriters were not serving as the primary market maker for their IPO underwriting clients after the immediate post-IPO period. In fact, the leading market maker for most of the companies was NASDAQ's super montage.

Table 11 shows the results of estimating the relationship between these proxies for the importance of the underwriter as the market maker and abnormal returns. I find no evidence to support Alternative 3 that companies whose underwriter was a market maker underperform. Unfortunately, detailed quote data is only available for NASDAQ. It is likely that market makers are more important for the NYSE traded companies, but comparable quote data was not available. [dummy variable if the underwriter was the company's NYSE specialist to come in a later draft]

F. Investors

A final way in which an underwriter's failure may impact its clients' prices is through the investment bank's role as an investor. The mechanism for this impact is two-fold. First, if any of the investment banks' asset management divisions were investors in these companies and these divisions disproportionately sold shares in connection with the failure, this would have a negative price impact. Second, even if the underwriters' asset management affiliates did not actually sell their shares, market participants' fear of the price impact of a forced liquidation might depress prices.

CDA Spectrum data from the quarter preceding the failure shows that in 95% of the issues, underwriters held less than 3% of the companies' stock. I use the Spectrum

data to calculate three measures of an underwriter's investment in the stock as of the quarter end preceding the event date: i) Shares held by underwriter (*USHARES*), ii) a dummy variable = 1 if the underwriter holds any shares (*UDUMMY*) and, iii) The percentage of shares held by the underwriter (*UPER*). At the median, the underwriter tends to hold some shares of the sample companies, but the amounts held were very small. If a company is not in the Spectrum database, I assume that the underwriter holding is 0. The mean percentage of shares outstanding held by the underwriter was 0.007. The coefficients on the three measures are all negative, but not significant, and the coefficient on the constant remains negative. Results presented in Table 12 show weak evidence to support Alternative 4, that companies whose underwriters are stockholders will be the most negatively affected by the failure of their underwriter.

If the companies in which underwriters are investors have marginally worse abnormal returns, this may still indicate the presence of post-IPO information production by the underwriter. If entities affiliated with the underwriter invest in companies underwritten by the bank, they may do so because they have a lower marginal cost of information production because of the underwriting affiliation.

G. Post-event analysis – Quality reassessment

Each of the preceding analyses assumes a post-IPO role for the underwriter, be it information-based or not. Alternative 5 proposes that the banks' failures led investors to update negatively on the quality of the trouble banks' underwriting clients. If this is the case, there will be no price impact when it is revealed that the underwriters will continue.

I test this proposition by examining the post-event cumulative abnormal returns (*POSTCAR)* for 4 days following the event, t = +3 through +7.

Figure 4 shows the post-event average daily returns for the sample. Initial underperformance is followed by outperformance (beginning around day 3). Figure 5 shows the returns by underwriter – Lehman Brothers and Merrill Lynch-underwritten companies have the highest post-event performance. Finally Figure 6 shows the daily abnormal returns relative to several indexes.

I test the proposition that post-event cumulative abnormal returns are equal to zero by estimating:

$$POSTCAR_{i,t} = \alpha + \varepsilon_{i,t}$$

Where $POSTCAR_{i,t}$ is the sum of daily abnormal returns of company i from the event date $t+3$ through t+7 and α measures the extent of the underperformance.

Table 13 the results of this test of cumulative abnormal returns for days 3 to 7 post-event. I find no evidence for Alternative 5. Once it is revealed that the investment banks will continue operations in some format, companies appear to outperform and earn back the negative event day returns.

V. Conclusion

For at least one day in 2008, the market believed that Bear Stearns, Lehman Brothers, Merrill Lynch and Wachovia might no longer be in business the following day. These "failures" were exogenous to the banks' equity underwriting operations, and thus offer natural experiment to estimate the impact of the loss of a primary investment banking relationship. Companies recently taken public by these banks suffered an

abnormal decline in equity value of 1%, a total loss of $3 billion or 20% of the spread earned on the initial public offerings. This negative abnormal return implies that investment banks are important to their clients even after the IPO.

Evidence suggests that investment banks are important because they are producing information and monitoring their post-IPO clients. The lowest abnormal returns were experienced by companies with fewer alternative monitors and by companies that were the most equity dependent. The source of these abnormal returns was not the underwriters' function as a lender or market maker.

Despite initial uncertainty at the event date and Lehman Brothers' bankruptcy, the operations of all four banks were acquired by other banks and the underwriting function continued. Abnormal returns for each client were positive post-event, suggesting that once it was known that the banks' monitoring and information production function would be continued, the abnormal price decline was reversed. This confirms that the source of these abnormal returns was not negative updating after the underwriters' failures.

While none of these investment banks have ceased underwriting operations, the observed impact on past clients has important implications for future investment banking clients and investors in initial public offerings. These stakeholders may need to carefully evaluate the health of the underwriter, not just its underwriting skills. Uncertainty about the overall health of underwriters may reduce access to equity capital markets if underwriters can no longer credibly execute their certification and monitoring role because investors fear that the underwriter may not be around to monitor the newly public company.

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FIGURE 1: AVERAGE DAILY RETURNS (0 = EVENT DATE)

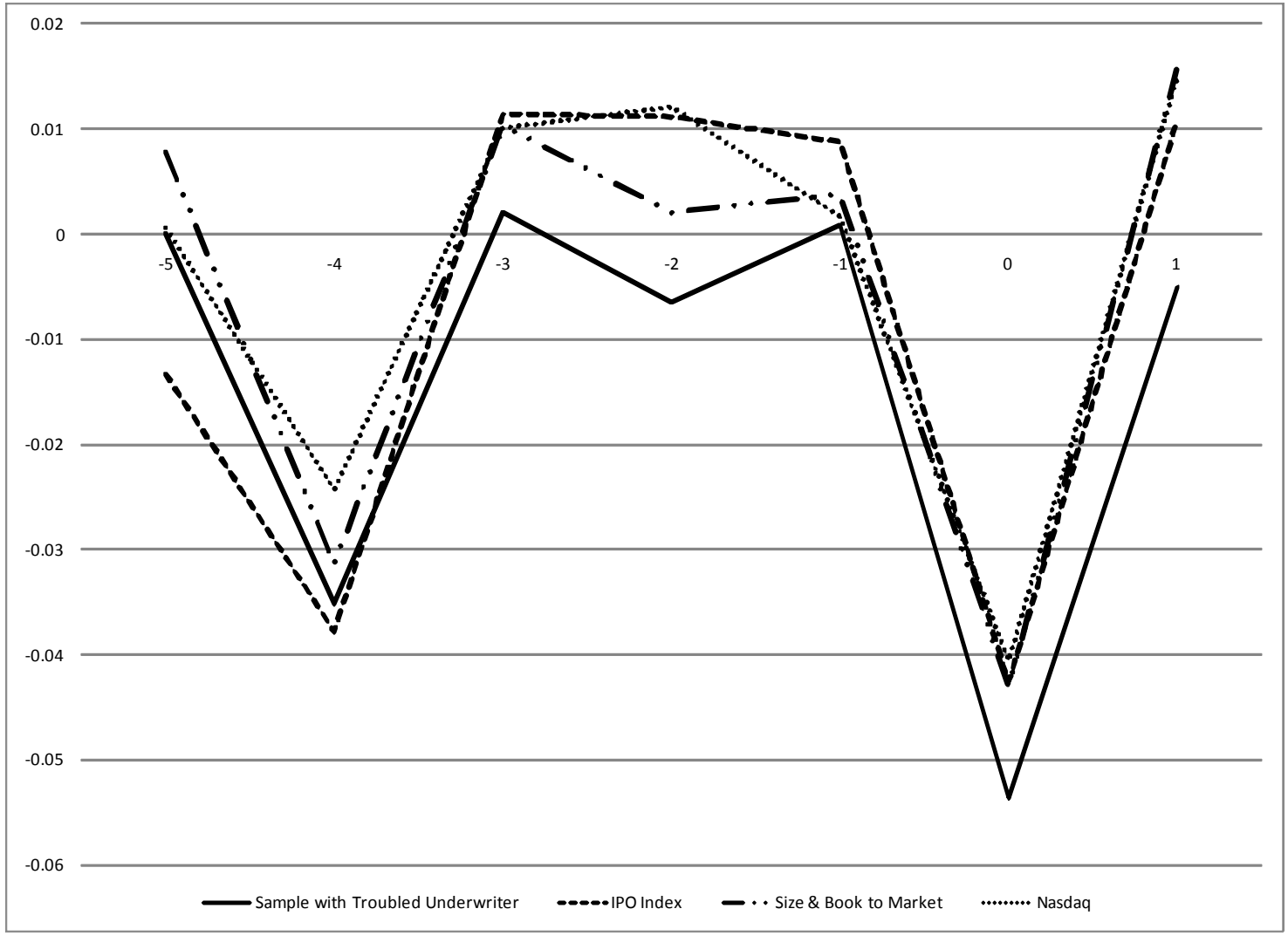

FIGURE 2: AVERAGE DAILY RETURNS OF COMPANIES (BY FAILED UNDERWRITER) (0 = EVENT DATE)

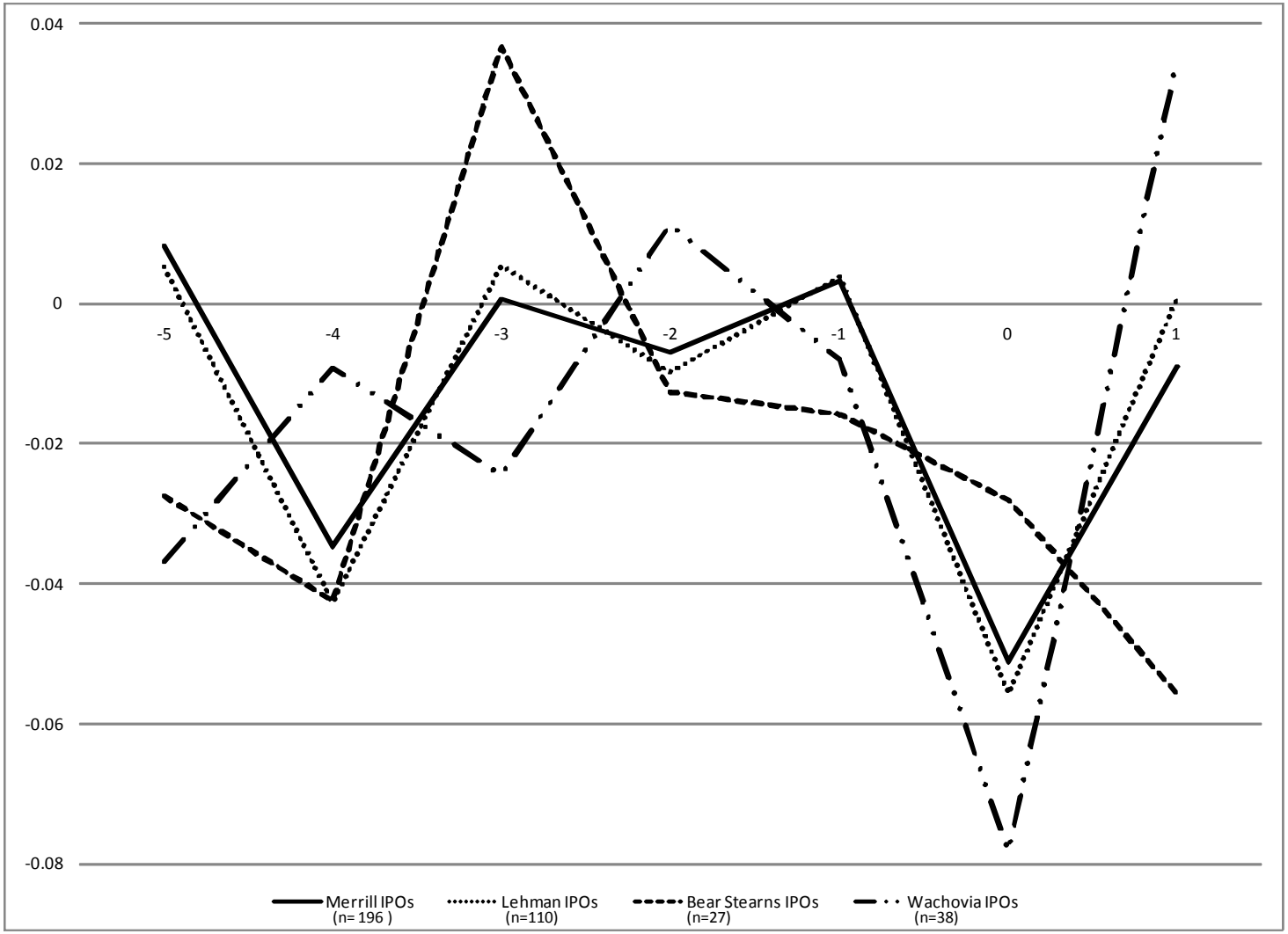

FIGURE 3: AVERAGE ABNORMAL RETURNS OF COMPANIES WITH FAILED UNDERWRITERS (0 = EVENT DATE)

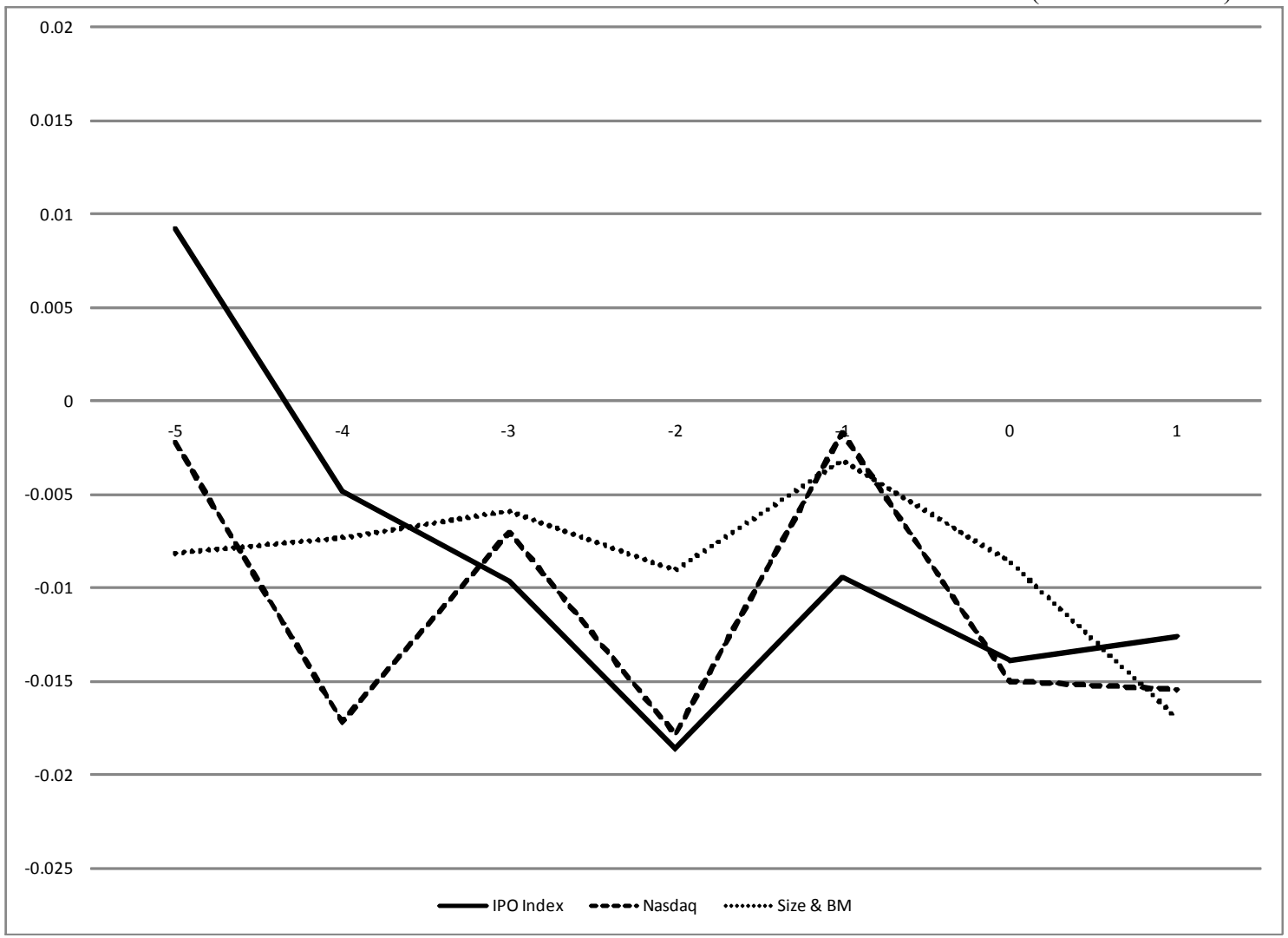

FIGURE 4: AVERAGE POST-EVENT DAILY RETURNS OF COMPANIES WITH FAILED UNDERWRITERS (0 = EVENT DATE)

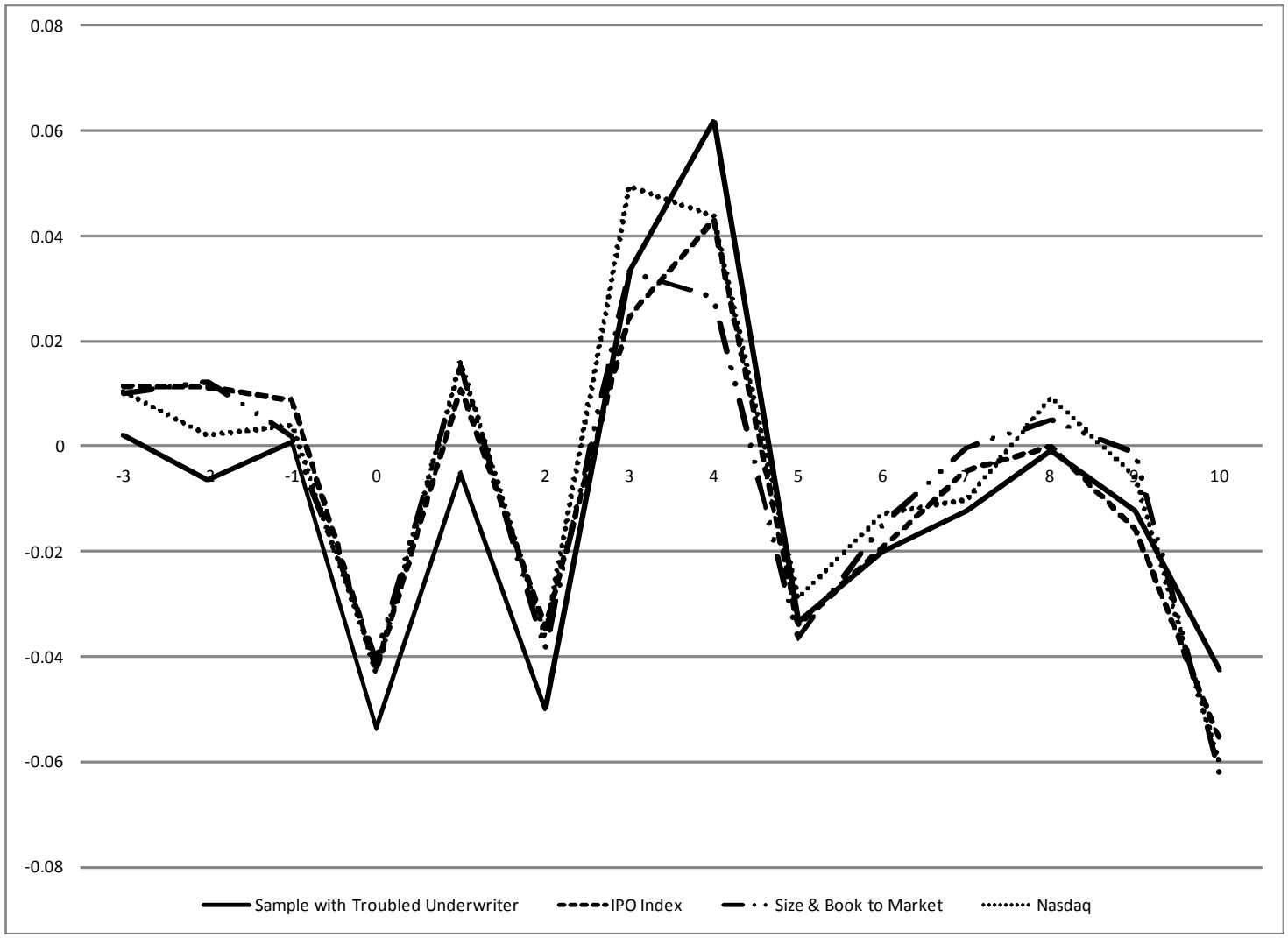

FIGURE 5: AVERAGE POST-EVENT DAILY RETURNS OF COMPANIES (BY FAILED UNDERWRITER) (0 = EVENT DATE)

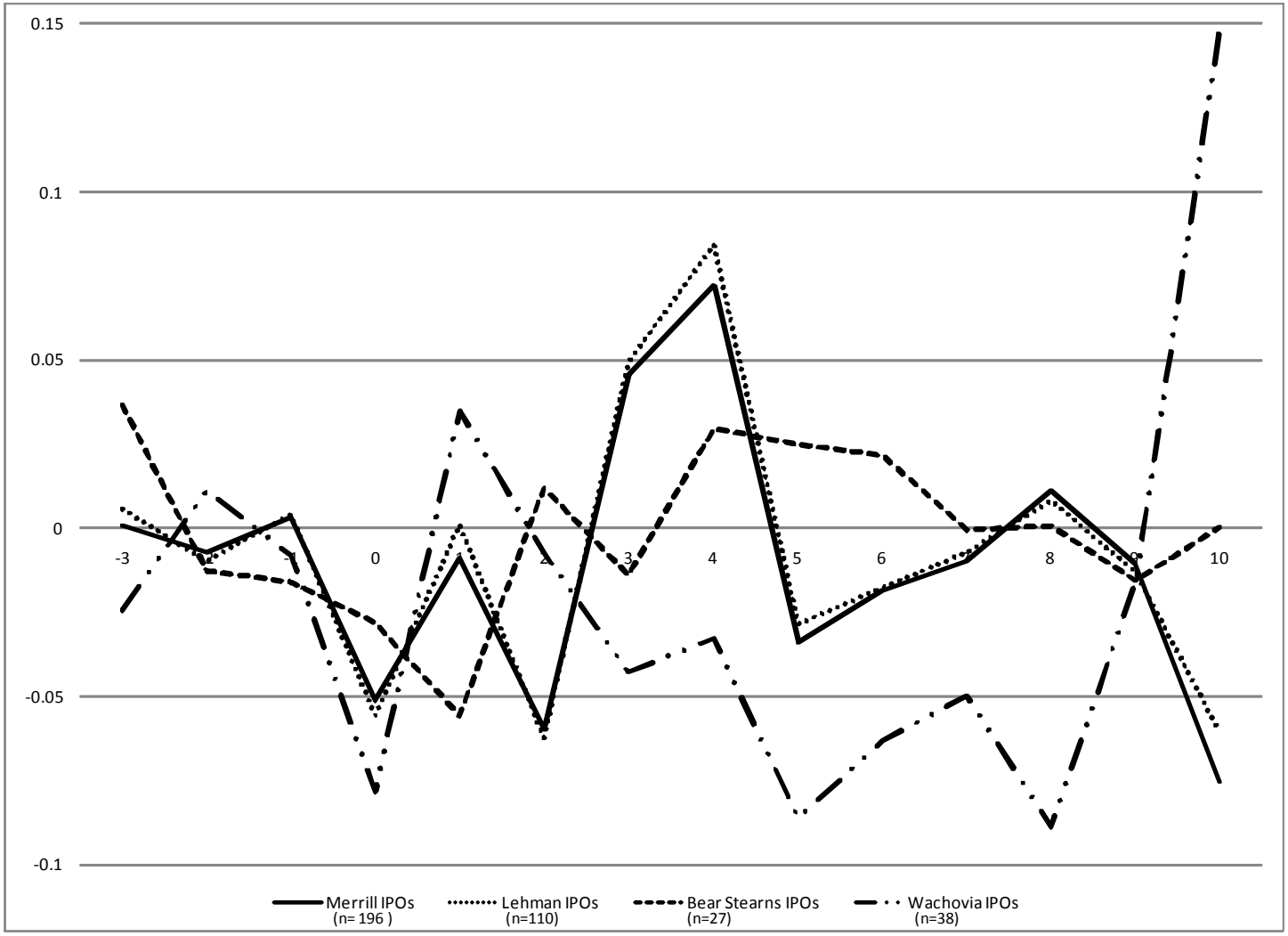

FIGURE 6: AVERAGE ABNORMAL RETURNS OF COMPANIES WITH FAILED UNDERWRITERS (0 = EVENT DATE)

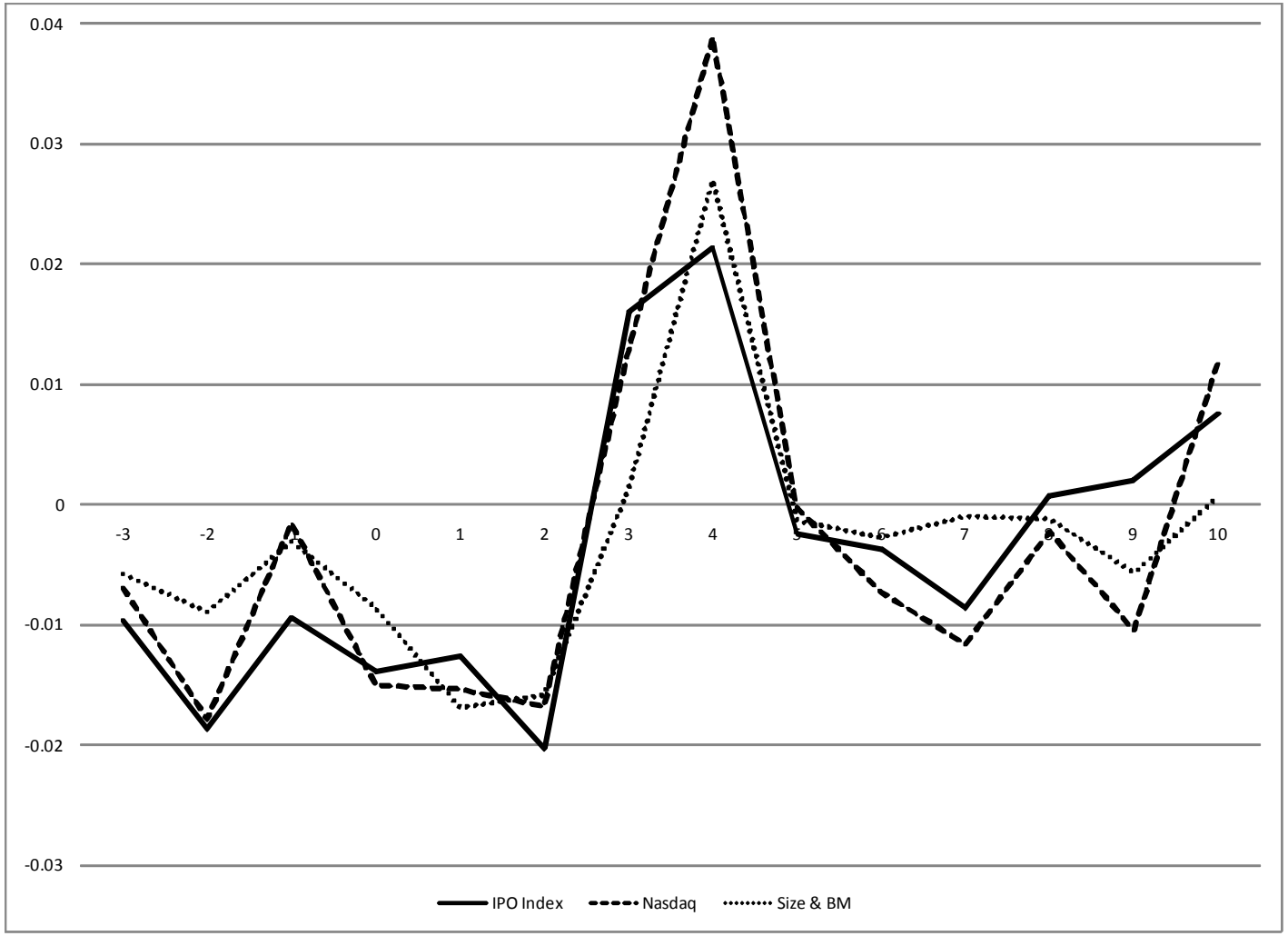

Table 1: Summary Statistics for Sample and IPO Index, by Event Date

The sample consists of 244 newly public companies with an IPO from 2004 to 2007 for which the failed underwriter was a lead or co-manager, for a total of 268 underwriter-company event day observations. IPO Index includes all companies with an IPO from 2004 to 2007 for which none of the failed underwriters were a lead or co-manager. Accounting variables are measured as of the fiscal quarter preceding the event date, price variables are measured as of 5 days prior to the event date. T-tests for difference were conducted between the IPO sample of companies underwritten by a troubled underwriter and the IPO index, comprised of all other recent IPOs. Diff. = Mean(IPO Index) - Mean(Underwriter IPO sample). The null hypothesis is no difference in the means. ***, ** and * indicate difference is significant at the 1%, 5%, and 10% levels, respectively.

Underwriter / *Event Date*		Lehman Brothers 15-Sep-08		Merrill Lynch 15-Sep-08		Wachovia 29-Sep-08		Bear Stearns 14-Mar-08		Total Sample Event Date	
Variable		*Means*	*Diff.*	*Means*	*Diff.*	*Means*	*Diff.*	*Means*	*Diff.*	*Means*	*Diff.*
Total Assets	IPO Index	1,146.9	-1,419.6 **	1,146.9	-982.3 *	1,146.9	-212.7	1,149.7	-535.0	1,147.2	-1,059.6 ***
	Sample	2,566.5		2,129.3		1,359.6		1,684.6		2,206.8	
Net Income	IPO Index	8.5	10.8	8.5	-7.3	8.5	-4.5	8.4	4.2	8.5	1.3
	Sample	-2.3		15.8		13.1		4.2		7.2	
Sales LTM	IPO Index	573.6	-618.3 ***	573.6	-354.9 ***	568.2	-387.6	570.4	107.0	568.7	-454.2 ***
	Sample	1,191.9		928.5		955.9		463.4		1,022.9	
Book to Market Value	IPO Index	0.83	-0.94	0.83	-0.19	1.07	0.32	0.94	0.29	0.86	-0.40
	Sample	1.77		1.03		0.75		0.65		1.26	
Market Value	IPO Index	889.6	10.5	889.6	72.5	804.9	232.1	948.4	162.0	889.2	69.4
	Sample	879.1		817.2		572.7		786.4		819.9	
Price to Earnings Ratio	IPO Index	126.7	198.6	126.7	71.7	119.5	71.5	-37.4	-29.4	109.6	111.9 ***
	Sample	-71.9		55.0		48.0		-8.0		-2.3	
Total Debt	IPO Index	251.5	-805.0 ***	251.5	-514.5 ***	251.5	-277.7	224.7	-580.1 ***	248.8	-616.2 ***
	Sample	1,056.5		766.1		529.2		804.8		865.0	
KZ Index	IPO Index	1.29	0.81	1.29	0.86	1.29	1.58	0.63	0.28	1.23	0.83 ***
	Sample	0.48		0.43		-0.29		0.36		0.40	
Venture Backed	IPO Index	0.35	0.07	0.35	0.06	0.35	0.20	0.36	0.03	0.35	0.07 ***
	Sample	0.28		0.29		0.15		0.33		0.28	
Days since IPO	IPO Index	975.9	48.7	975.9	115.9 ***	989.9	53.1	812.6	-35.6	960.5	69.9 ***
	Sample	927.2		860.1		936.9		848.2		890.6	

Table 2: Mean Event Day Return

The sample consists of 244 newly public companies with an IPO from 2004 to 2007 for which the failed underwriter was a lead or co-manager, for a total of 268 underwriter-company event day observations. Returns for each market benchmark reflect a weighted average of event day returns, weighted by the proportion of newly public companies underwritten by a troubled underwriter for the appropriate event date. The Size and Book to Market benchmark is composed of 25 size and book to market quintile matched portfolios. The SIC benchmark portfolio is generated by generating a matched portfolio for each company of all public companies in the same two-digit SIC code. IPO Index is a portfolio composed of all companies with an IPO from 2004 to 2007 for which none of the failed underwriters were a lead or co-manager.

Benchmarks	Sample Return		Benchmark Return	
		SD		difference:
S&P 500 Index	-0.0510	0.0508	-0.0475	-0.0034
NASDAQ	-0.0510	0.0508	-0.0388	-0.0122
NYSE Composite	-0.0510	0.0508	-0.0506	-0.0003
CRSP	-0.0510	0.0508	-0.0459	-0.0051
Size and Book to Market	-0.0510	0.0508	-0.0424	-0.0085
SIC matched	-0.0510	0.0508	-0.0430	-0.0080
IPO Index	-0.0510	0.0508	-0.0409	-0.0101

Table 3: Abnormal Return by Underwriter

Abnormal returns are the difference between the actual event day return and the conditional expected return calculated based on the listed benchmarks. The Size and Book to Market benchmark is composed of 25 size and book to market quintile matched portfolios. The SIC benchmark portfolio is generated by generating a matched portfolio for each company of all public companies in the same two-digit SIC code. IPO Index is a portfolio composed of all companies with an IPO from 2004 to 2007 for which none of the failed underwriters were a lead or co-manager.

		IPO Index	SIC Matched	NASDAQ Composite	NYSE	S&P 500	Size and Book to Market
	p25	-0.0455	-0.0461	-0.0549	-0.0445	-0.0506	-0.0396
Lehman	mean	-0.0237	-0.0230	-0.0295	-0.0151	-0.0215	-0.0150
	median	-0.0141	-0.0188	-0.0223	-0.0074	-0.0144	-0.0090
	p75	0.0088	0.0077	0.0078	0.0228	0.0177	0.0182
	N	104	104	104	104	104	104
	sd	0.0517	0.0528	0.0547	0.0587	0.0591	0.0519
	p25	-0.0288	-0.0218	-0.0218	-0.0221	-0.0211	-0.0243
Bear	mean	-0.0123	-0.0118	-0.0084	-0.0083	-0.0084	-0.0090
	median	-0.0024	-0.0052	-0.0025	0.0010	-0.0014	-0.0007
	p75	0.0065	0.0102	0.0138	0.0148	0.0143	0.0132
	N	27	27	27	27	27	27
	sd	0.0613	0.0592	0.0612	0.0613	0.0615	0.0602
	p25	-0.0132	-0.0175	-0.0211	-0.0166	-0.0221	-0.0252
Wachovia	mean	0.0260	0.0220	0.0418	0.0298	0.0333	0.0131
	median	0.0160	0.0166	0.0545	0.0246	0.0349	0.0000
	p75	0.0602	0.0544	0.0817	0.0712	0.0826	0.0452
	N	20	20	20	20	20	20
	sd	0.0802	0.0693	0.0819	0.0786	0.0778	0.0707
	p25	-0.0370	-0.0420	-0.0416	-0.0276	-0.0332	-0.0290
Merrill	mean	-0.0168	-0.0183	-0.0196	-0.0037	-0.0087	-0.0070
	median	-0.0131	-0.0104	-0.0118	-0.0023	-0.0041	-0.0002
	p75	0.0041	0.0058	0.0036	0.0199	0.0163	0.0135
	N	117	117	117	117	117	117
	sd	0.0449	0.0419	0.0466	0.0496	0.0501	0.0459
Total	p25	-0.0381	-0.0427	-0.0460	-0.0335	-0.0408	-0.0330
	mean	-0.0158	-0.0165	-0.0177	-0.0061	-0.0105	-0.0088
	median	-0.0112	-0.0108	-0.0120	-0.0020	-0.0048	-0.0026
	p75	0.0084	0.0083	0.0111	0.0238	0.0185	0.0149
	N	268	268	268	268	268	268
	sd	0.0537	0.0515	0.0572	0.0577	0.0586	0.0521

Table 4: Event Date Abnormal Returns

The sample consists of 244 newly public companies with an IPO from 2004 to 2007 for which the failed underwriter was a lead or co-manager, for a total of 268 underwriter-company event day observations. The dependent variable is *Abnormal return*, the difference on the event day ($t = 0$) between the actual event day return and the conditional expected return calculated based on the listed benchmarks. The Size and Book to Market benchmark is composed of 25 size and book to market quintile matched portfolios. The SIC benchmark portfolio is generated by generating a matched portfolio for each company of all public companies in the same two-digit SIC code. IPO Index is a portfolio composed of all companies with an IPO from 2004 to 2007 for which none of the failed underwriters were a lead or co-manager. ***, ** and * indicate t-statistic is significant at the 1%, 5%, and 10% levels, respectively.

	Estimate	*[t-stat]*		N
S&P 500	-0.0105	*[2.93]*	***	268
NASDAQ Composite	-0.0177	*[5.08]*	***	268
NYSE	-0.0061	*[1.73]*	*	268
CRSP	-0.0081	*[2.30]*	**	268
Size and Book to Market Matched	-0.0064	*[2.00]*	**	268
Recent IPOs	-0.0158	*[4.82]*	***	268
SIC2	-0.0165	*[5.24]*	***	268

Table 5: Summary Statistics for IPO Sample

The sample consists of 244 newly public companies with an IPO from 2004 to 2007 for which the failed underwriter was a lead or co-manager, for a total of 268 underwriter-company event day observations. IPO Index includes all companies with an IPO from 2004 to 2007 for which none of the failed underwriters were a lead or co-manager. Accounting and ownership variables are measured as of the fiscal quarter preceding the event date, price variables are measured as of 5 days prior to the event date, and market making variables are measured as of December 1, 2007.

				Distribution		
	N	Mean	*SD*	25th	50th	75th
Company Descriptors						
Sales LTM - *$M*	255	1,022.9	2,449.8	116.7	325.3	1,020.6
Total Assets - *$M*	263	2,206.8	5,044.5	248.5	747.3	2,005.4
Market Value of Common Equity - *$M*	268	819.9	1,045.0	202.7	466.1	992.3
Total Debt - *$M*	268	865.0	2,304.2	1.1	189.4	612.6
Information						
Days Since IPO	268	890.6	411.1	554.5	805.0	1,243.5
Number of Equity Analysts	268	6.1	4.3	4	6	8
SD IBES EPS Estimates (1 yr)	255	0.0829	0.2119	0.0097	0.0222	0.0587
SD IBES EPS Estimates (2 yr)	255	0.0906	0.2539	0.0102	0.0210	0.0566
Underwriter est. less mean est.	221	-0.0315	0.8086	-0.6000	0.0	0.5714
% of shares held by institutions	268	0.5248	0.3224	0.2865	0.5194	0.7371
Percentage block size	268	0.0076	0.0051	0.0043	0.0068	0.0100
Venture Backed Dummy	268	0.2799	0.4498	0	0	1
Number of Book Underwriters	268	2.3	1.2	2	2	3
Equity Dependence						
KZ Index	242	0.40	1.86	-0.17	0.49	1.39
Dummy for Middle Third KZ Index	242	0.34	0.47	0	0	1
Dummy for Top Third KZ Index	242	0.33	0.47	0	0	1
Debt to Capital	232	0.3986	0.4121	0.0355	0.3271	0.6383
Cashflow to Capital	218	0.0808	0.2657	0.0562	0.1277	0.1903
Cash to Capital	250	0.4123	0.7177	0.0333	0.1246	0.4886
Tobin's Q	245	3.1541	7.3627	1.1088	1.5759	2.5650
Dividends to Capital	250	0.0263	0.0579	0.0	0.0	0.0252
Lending						
No Debt Dummy	268	0.2127	0.4100	0	0	0
Underwriter is Lender - *Dummy*	248	0.06	0.2	0	0	0
Market Making						
Underwriter had Inside Quote - *Dummy*	129	0.0620	0.2421	0	0	0
Dollar Volume (Bid) - *$100s*	129	28.95	157.25	0.00	0.00	0.00
Dollar Volume (Ask) - *$100s*	129	32.78	183.58	0.00	0.00	0.00
Investor						
Shares Held by Underwriter	268	0.5702	3.7936	0.00	0.01	0.12
Dummy if Underwriter Holds Shares	268	0.6157	0.4873	0	1	1
% shares Held by Underwriter	268	0.0070	0.0229	0.00	0.00	0.00

Table 6: Proxies for Information - Abnormal Returns Relative to IPO Index

The sample consists of 244 newly public companies with an IPO from 2004 to 2007 for which the failed underwriter was a lead or co-manager, for a total of 268 underwriter-company event day observations. The dependent variable is *Abnormal return*, the difference on the event day ($t = 0$) between the actual event day return and the conditional expected return calculated based on the IPO Index. *Log Days Since IPO* is the logarithm of the number of days between the IPO file date and the event date. *Log Number of Equity Analysts* is the logarithm of the number of equity analysts for the company. *SD IBES EPS Estimates (1 yr)* is the standard deviation of the one year forward earnings per share estimates in IBES as of the event date. *SD IBES EPS Estimates (2 yr)* is the standard deviation of the two year forward earnings per share estimates in IBES as of the event date. *Underwriter estimate less mean estimate* is the difference between the one year forward underwriter estimate and mean estimate of equity analysts in IBES as of the event date. *% of shares held by institutions* is the percentage of total shares outstanding held by institutions as of the quarter preceding the event date. *% block size* is the average block size divided by shares outstanding as of the quarter preceding the event date. *Venture Backed Dummy* is a dummy variable equal to one if the company was venture backed at its IPO filing. *Log Number of Book Underwriters* is the logarithm of the number of book underwriters for the company at its IPO filing. Statistics calculated with standard errors robust to heteroskedasticity. Absolute value of t-statistics is in brackets. ***, ** and * indicate *p*-values of 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-0.0069	-0.0341 ***	-0.0144 ***	-0.0144 ***	-0.0178 ***	-0.0279 ***	-0.0236 ***	-0.0183 ***	-0.0170 ***
	[0.18]	*[2.95]*	*[4.31]*	*[4.28]*	*[5.18]*	*[5.10]*	*[4.56]*	*[4.25]*	*[2.88]*
Log Days Since IPO	-0.0013								
	[0.23]								
Log Number of Equity Analysts		0.0104 *							
		[1.81]							
SD IBES EPS Estimates (1 yr)			-0.0181						
			[0.73]						
SD IBES EPS Estimates (2 yr)				-0.0173					
				[0.84]					
Underwriter estimate less mean estimate					-0.0004				
					[0.11]				
% of shares held by institutions						0.0230 **			
						[2.56]			
% block size							1.0135 **		
							[1.98]		
Venture Backed Dummy								0.0088	
								[1.53]	
Log Number of Book Underwriters									0.0017
									[0.23]
Number of Observations	268	268	255	255	221	268	268	268	268
Adjusted R-squared	0.0002	0.0126	0.0050	0.0065	0.0000	0.0190	0.0093	0.0054	0.0002

Table 7: Proxies for Information - Abnormal Returns Relative to Nasdaq

The sample consists of 244 newly public companies with an IPO from 2004 to 2007 for which the failed underwriter was a lead or co-manager, for a total of 268 underwriter-company event day observations. The dependent variable is *Abnormal return*, the difference on the event day ($t = 0$) between the actual event day return and the conditional expected return calculated based on the Nasdaq Index. *Log Days Since IPO* is the logarithm of the number of days between the IPO file date and the event date. *Log Number of Equity Analysts* is the logarithm of the number of equity analysts for the company. *SD IBES EPS Estimates (1 yr)* is the standard deviation of the one year forward earnings per share estimates in IBES as of the event date. *SD IBES EPS Estimates (2 yr)* is the standard deviation of the two year forward earnings per share estimates in IBES as of the event date. *Underwriter estimate less mean estimate* is the difference between the one year forward underwriter estimate and mean estimate of equity analysts in IBES as of the event date. *% of shares held by institutions* is the percentage of total shares outstanding held by institutions as of the quarter preceding the event date. *% block size* is the average block size divided by shares outstanding as of the quarter preceding the event date. *Venture Backed Dummy* is a dummy variable equal to one if the company was venture backed at its IPO filing. *Log Number of Book Underwriters* is the logarithm of the number of book underwriters for the company at its IPO filing. Statistics calculated with standard errors robust to heteroskedasticity. Absolute value of t-statistics is in brackets. ***, ** and * indicate *p*-values of 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-0.0279	-0.0370 ***	-0.0160 ***	-0.0160 ***	-0.0207 ***	-0.0340 ***	-0.0278 ***	-0.0209 ***	-0.0178 ***
	[0.64]	*[3.06]*	*[4.44]*	*[4.46]*	*[5.81]*	*[5.86]*	*[4.86]*	*[4.57]*	*[2.79]*
Log Days Since IPO	0.0015								
	[0.23]								
Log Number of Equity Analysts		0.0113 *							
		[1.84]							
SD IBES EPS Estimates (1 yr)			-0.0172						
			[0.69]						
SD IBES EPS Estimates (2 yr)				-0.0157					
				[0.79]					
Underwriter estimate less mean estimate					-0.0013				
					[0.34]				
% of shares held by institutions						0.0310 ***			
						[3.23]			
% block size							1.3225 **		
							[2.27]		
Venture Backed Dummy								0.0114 *	
								[1.88]	
Log Number of Book Underwriters									0.0001
									[0.01]
Number of Observations	268	268	255	255	221	268	268	268	268
Adjusted R-squared	0.0002	0.0132	0.0040	0.0048	0.0004	0.0305	0.0140	0.0081	0.0000

Table 8: Equity Dependence - Abnormal Returns Relative to IPO Index

The sample consists of 244 newly public companies with an IPO from 2004 to 2007 for which the failed underwriter was a lead or co-manager, for a total of 268 underwriter-company event day observations. The dependent variable is *Abnormal return*, the difference on the event day ($t = 0$) between the actual event day return and the conditional expected return calculated based on the IPO Index. *KZ Index* is an index of equity dependence based on Kaplan and Zingales (1997) as calculated by Lamont, Polk, and Saa-Requejo (2001). *Dummy for Middle (Top) Third KZ Index* is a dummy variable equal to one if the company's KZ Index is in the middle (top) third of the IPO Sample. *Debt to Capital* is total debt divided by total assets. *Cashflow to Capital* is operating income before depreciation divided by total assets. *Cash to Capital* is cash and equivalents divided by total assets. *Tobin's Q* is the ratio of total equity market value plus total assets minus book value all over total assets. *Dividends to Capital* is yearly cash dividends divided by total assets. Statistics calculated with standard errors robust to heteroskedasticity. Absolute value of t-statistics is in brackets. ***, ** and * indicate *p*-values of 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	-0.0148 ***	-0.0058	-0.0124 ***	-0.0176 ***	-0.0179 ***	-0.0166 ***	-0.0154 ***
	[4.51]	*[1.19]*	*[2.83]*	*[4.25]*	*[4.83]*	*[4.63]*	*[4.28]*
KZ Index	-0.0031 **						
	[2.02]						
Dummy for Middle Third KZ Index		-0.0204 **					
		[2.43]					
Dummy for Top Third KZ Index		-0.0099					
		[1.38]					
Debt to Capital			-0.0107 *				
			[1.68]				
Cashflow to Capital				0.0162			
				[0.89]			
Cash to Capital					0.0054 **		
					[1.97]		
Tobin's Q						0.0004	
						[1.50]	
Dividends to Capital							-0.0145
							[0.33] ***
Number of Observations	242	242	232	218	250	245	250
Adjusted R-squared	0.0121	0.0262	0.0071	0.0065	0.0056	0.0028	0.0003

Table 9: Equity Dependence - Abnormal Returns Relative to Nasdaq

The sample consists of 244 newly public companies with an IPO from 2004 to 2007 for which the failed underwriter was a lead or co-manager, for a total of 268 underwriter-company event day observations. The dependent variable is *Abnormal return*, the difference on the event day ($t = 0$) between the actual event day return and the conditional expected return calculated based on the Nasdaq Index. *KZ Index* is an index of equity dependence based on Kaplan and Zingales (1997) as calculated by Lamont, Polk, and Saa-Requejo (2001). *Dummy for Middle (Top) Third KZ Index* is a dummy variable equal to one if the company's KZ Index is in the middle (top) third of the IPO Sample. *Debt to Capital* is total debt divided by total assets. *Cashflow to Capital* is operating income before depreciation divided by total assets. *Cash to Capital* is cash and equivalents divided by total assets. *Tobin's Q* is the ratio of total equity market value plus total assets minus book value all over total assets. *Dividends to Capital* is yearly cash dividends divided by total assets. Statistics calculated with standard errors robust to heteroskedasticity. Absolute value of t-statistics is in brackets. ***, ** and * indicate *p*-values of 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	-0.0163 ***	-0.0064	-0.0129 ***	-0.0182 ***	-0.0204 ***	-0.0177 ***	-0.0166 ***
	[4.62]	*[1.22]*	*[2.72]*	*[4.19]*	*[5.11]*	*[4.68]*	*[4.35]*
KZ Index	-0.0040 **						
	[2.38]						
Dummy for Middle Third KZ Index		-0.0202 **					
		[2.21]					
Dummy for Top Third KZ Index		-0.0141 *					
		[1.84]					
Debt to Capital			-0.0151 **				
			[2.14]				
Cashflow to Capital				0.0097			
				[0.50]			
Cash to Capital					0.0069 **		
					[2.42]		
Tobin's Q						0.0002	
						[0.76]	
Dividends to Capital							-0.0400
							[0.78]
Number of Observations	242	242	232	218	250	245	250
Adjusted R-squared	0.0178	0.0231	0.0123	0.0021	0.0080	0.0007	0.0017

Note: Statistics calculated with robust standard errors. Statistically significant coefficients at the .05 level and above are in bold.

Table 10: Lending

The sample consists of 244 newly public companies with an IPO from 2004 to 2007 for which the failed underwriter was a lead or co-manager, for a total of 268 underwriter-company event day observations. The dependent variable is *Abnormal return*, the difference on the event day ($t = 0$) between the actual event day return and the conditional expected return calculated based on the Nasdaq Index for specifications 1 and 2 or the IPO Index for specifications 3 and 4. *No Debt Dummy* is a dummy variable equal to one if the firm has no debt. *Underwriter is Lender* is a dummy variable that is equal to one if the underwriter is identified as a lender to the company as of the most recent 10-K filing. Statistics calculated with standard errors robust to heteroskedasticity. Absolute value of t-statistics is in brackets. ***, ** and * indicate *p*-values of 1%, 5%, and 10%, respectively.

	Nasdaq				IPO Index			
	(1)		(2)		(3)		(4)	
Constant	-0.0189	***	-0.0184	***	-0.0166	***	-0.0162	***
	[4.73]		*[4.94]*		*[4.44]*		*[4.65]*	
No Debt Dummy	0.0057				0.0038			
	[0.69]				*[0.49]*			
Underwriter is Lender			0.0125				0.0085	
			[1.05]				*[0.79]*	
Number of Observations	268		248		268		248	
Adjusted R-squared	0.0017		0.003		0.0008		0.0016	

Table 11: Market Making

The sample consists of 129 companies for whom Nastraq quote data was available on 12/1/2007. The dependent variable is *Abnormal return*, the difference on the event day ($t = 0$) between the actual event day return and the conditional expected return calculated based on the Nasdaq Index for specifications 1, 2 and 3 or the IPO Index for specifications 4, 5 and 6. *Underwriter had Inside Quote* is a dummy variable equal to one if the underwriter of the company was a market maker and had either the lowest ask or the highest bid at least once during the trading day. *Dollar Volume (Bid/Ask)* is the product of the bid(ask) price and bid(ask) size. Statistics calculated with standard errors robust to heteroskedasticity. Absolute value of t-statistics is in brackets. ***, ** and * indicate *p*-values of 1%, 5%, and 10%, respectively.

	Nasdaq						IPO Index					
	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	-0.0128	***	-0.0143	***	-0.0142	***	-0.0129	***	-0.0146	***	-0.0146	***
	[2.61]		*[3.03]*		*[3.02]*		*[2.75]*		*[3.21]*		*[3.21]*	
Underwriter had Inside Quote	0.0321						0.0195					
	[1.15]						*[0.77]*					
Dollar Volume (Bid)			0.0001	***					0.0001	***		
			[4.39]						*[4.27]*			
Dollar Volume (Ask)					0.0001	***					0.0001	***
					[5.36]						*[5.47]*	
Number of Observations	129		129		129		129		129		129	
Adjusted R-squared	0.0192		0.1106		0.1127		0.0079		0.0896		0.0931	

Table 12: Underwriter as Investor

The sample consists of 244 newly public companies with an IPO from 2004 to 2007 for which the failed underwriter was a lead or co-manager, for a total of 268 underwriter-company event day observations. The dependent variable is *Abnormal return*, the difference on the event day ($t = 0$) between the actual event day return and the conditional expected return calculated based on the Nasdaq Index for specifications 1, 2 and 3 or the IPO Index for specifications 4, 5 and 6. *Shares Held by Underwriter* is the amount of shares held by the underwriter as of the quarter preceding the event date. *Dummy if Underwriter Holds Shares is* a dummy variable equal to one if the underwriter held any shares of the company as of the quarter preceding the event date. *% shares Held by Underwriter* is the number of shares held by the underwriter divided by total shares outstanding for the company as of the quarter preceding the event date. Statistics calculated with standard errors robust to heteroskedasticity. Absolute value of t-statistics is in brackets. ***, ** and * indicate *p*-values of 1%, 5%, and 10%, respectively.

	Nasdaq						IPO Index					
	(1)		(2)		(3)		(4)		(5)		(6)	
Constant	-0.0174	***	-0.0169	***	-0.0166	***	-0.0155	***	-0.0156	***	-0.0150	***
	[4.92]		*[3.38]*		*[4.57]*		*[4.67]*		*[3.20]*		*[4.37]*	
Shares Held by Underwriter	-0.0005						-0.0005	*				
	[1.63]						*[1.90]*					
Dummy if Underwriter Holds Shares			-0.0014						-0.0004			
			[0.20]						*[0.06]*			
% shares Held by Underwriter					-0.1622	*					-0.1175	
					[1.83]						*[1.46]*	
Number of Observations	268		268		268		268		268		268	
Adjusted R-squared	0.0013		0.0001		0.0042		0.0012		0.0000		0.0025	

Table 13: Post Event Date Abnormal Returns

The sample consists of 244 newly public companies with an IPO from 2004 to 2007 for which the failed underwriter was a lead or co-manager, for a total of 268 underwriter-company event day observations. The dependent variable is *Abnormal return*, the cumulative difference on days $t = +3$ to $+7$ between the actual event day return and the conditional expected return calculated based on the listed benchmarks. The Size and Book to Market benchmark is composed of 25 size and book to market quintile matched portfolios. The SIC benchmark portfolio is generated by generating a matched portfolio for each company of all public companies in the same two-digit SIC code. IPO Index is a portfolio composed of all companies with an IPO from 2004 to 2007 for which none of the failed underwriters were a lead or co-manager. ***, ** and * indicate t-statistic is significant at the 1%, 5%, and 10% levels, respectively.

	Estimate	*[t-stat]*		N
S&P 500	0.0257	*[3.59]*	***	268
NASDAQ Composite	0.0249	*[3.52]*	***	268
NYSE	0.0070	*[0.96]*		268
CRSP	0.0193	*[2.73]*	***	268
Size and Book to Market Matched	0.0218	*[3.34]*	***	268
Recent IPOs	0.0164	*[2.38]*	**	268
SIC2	0.0310	*[4.97]*	***	268