Do Banks Reduce Information Asymmetry and Monitor Firm Performance? Evidence from Bank Loans to IPO Firms

Tatyana Sokolyk[*]
Department of Economics and Finance
University of Wyoming
phone: (307) 766-4244
fax: (307) 766-5090
email: tsokolyk@uwyo.edu

June 2009

Abstract

I investigate whether banks produce additional information and contribute to better performance of IPO firms. A quarter of IPOs borrows large amounts from the banks within one year after a firm's IPO. The probability of getting a loan soon after an IPO is greater for larger, more profitable, non-technology firms, with higher leverage, and with bank loans prior to the IPO. The average stock return around the loan announcement date is zero for the entire sample, but is positive for half of the firms. The returns are more positive for smaller, poorer performing firms, with low initial returns, suggesting that bank lending is valuable for IPOs with greater information asymmetry. IPO borrowers have better post-IPO operating and stock performance.

I.   Introduction

Theories of financial intermediation state that banks, through their lending activity, play a special role in reducing information asymmetry about a borrowing firm. Diamond (1984) develops a model which shows that financial intermediaries exist because they can efficiently evaluate and monitor the borrowers.   Bernanke (1983), Fama (1985), and Berlin and Loeys (1988) argue that banks enhance a borrowing firm's value by reducing information asymmetries or by monitoring firm performance. Several empirical studies (e.g., Mikkelson and Partch (1986), James (1987), and Lummer and McConnell (1989)) document that, contrary to the announcements of publicly placed debt and seasoned equity issue, the announcements of bank loan agreements generate significantly positive abnormal returns to borrowers.[1] This combination of theoretical models and empirical evidence has led financial economists to characterize bank loans as "special" or "unique" among a firm's financing alternatives (see, Boot (2000), Ongena and Smith (2000)).

Several recent studies, however, question the "special" nature of bank lending. Fields, Fraser, Berry, and Byers (2006) argue that the advantages of bank lending relationships have disappeared since the 1980s due to changes in banking environment and due to greater availability of and less costly financial information. They find that bank loan announcements are associated with positive abnormal returns in the 1980s but not in the latter part of the sample. The authors, however, suggest that bank lending may still be valuable to some groups of firms, e.g., smaller or poorer performing firms. Billett, Flannery, and Garfinkel (2006) examine the long-term effects of bank lending on borrower's stock and operating performance. They find negative abnormal stock returns

---

[1] Ritter (2002) summarizes the studies that examine the impact of financing decisions on firm equity value.

and poor operating performance of borrowing firms during three years following a bank loan announcement.

This study contributes to the vast literature on bank lending by examining bank loans to new public firms. The main question of this study is whether banks, through their lending activity, produce additional information and contribute to better performance of firms that borrow from the banks soon after the initial public offering. Since IPO firms do not have a record of public stock trading, there is a high degree of uncertainty regarding their performance. For example, Jain and Kini (1999) show that, despite a wide coverage of IPOs by rating agencies and financial press, IPO firms are characterized by high level of information asymmetry and uncertainty about their future performance. Additionally, Rajan and Servaes (1997) find that analysts systematically overestimate the earnings of IPO firms. Thus, if banks reduce information asymmetry and monitor borrowing firms, the sample of IPO firms offers an excellent opportunity to examine the "special" effects of bank lending.

Prior studies examine bank loans to IPO firms, but from a different perspective. Pagano, Pannetta, and Zingales (1998) document that the cost of debt decreases after a company goes public, suggesting that the credit quality of a company increases after it goes public due to decrease in leverage. Sunder (2002) finds that the cost of bank borrowing decreases because banks infer information from the security prices after the IPO and gain from information production in financial markets.

This study documents that IPO firms borrow quite frequently from the banks large amounts soon after a firm's initial public offering. Almost a quarter of IPO firms (24%) borrow from the banks the amounts, on average, almost three times larger than the

2

amount raised at the IPO. The terms of bank loans to IPO firms are comparable to those of seasoned firms. IPO firms, on average, get lower loan costs but stricter loan structure through the sponsorship and security requirements. Larger, more profitable, non-technology IPOs, with higher leverage, and with banking relations established prior to the initial public offering are more likely to receive a bank loan within one year after going public. Consistent with Fields, Fraser, Berry, and Byers (2006), there is no abnormal market reaction to the announcement of a first bank loan granted to a new public firm. However, the market reaction is more positive for smaller, poorer performing IPOs, with low initial returns, suggesting that these firms, which are likely to have higher information asymmetry and uncertainty about their future performance benefit from bank lending. Finally, I find that bank lending is associated with better post-IPO performance of borrowing firms. Compared to IPO firms that do not borrow from the banks soon after the initial public offering, IPO borrowers have higher changes in operating performance and better stock performance up to three years following a firm's IPO.

The remainder of the paper is organized as follows. The next section describes the data. Section III examines the differences in firm and offer characteristics between IPO borrowers and non-borrowers. Section IV presents the results on the market reaction to bank loan announcements. Section V compares post-IPO performance of borrowing and non-borrowing firms. Section VI concludes the paper.

II. Sample Description

Data used in this study come from two sources. The Securities Data Corporation (SDC) New Issues database is utilized to identify U.S. common stock offerings during January 1, 1990 - December 31, 2000. Consistent with previous IPO research, I eliminate closed-end funds, depositary shares, real estate investment trusts (REITs), spinoffs, unit issues, reverse leveraged buyouts, financial institutions (SIC codes 6000-6999), and utilities (SIC codes 4900-4999). I also eliminate shares with offer price below five dollars and check for the availability of post-IPO stock return and accounting data on CRSP and COMPUSTAT, respectively. My final IPO sample consists of 3,218 firms.

Data on the offer date, offer price, initial filing range, net IPO proceeds, and whether the firm was backed by a venture capitalist is collected from SDC. For each firm, I also calculate the price run-up as the percent difference between the offer price and the midpoint of the initial filing range. In addition, I compute the initial return as the percent difference between the first after-market closing price and the offer price. I also record firm age, which is measured as the number of years since the company was founded.[2]

To determine which IPO firms receive bank loans soon after the initial public offering, I collect information on bank loans from the Dealscan database supplied by the Loan Pricing Corporation. Dealscan provides information on the characteristics and terms of bank loans, including the identity of the borrower and the lender, date, type, amount, rate, and collateral of the loan. I restrict my sample to the U.S. firms that borrow from the banks during January 1, 1990 - December 31, 2001 and have stock return and accounting data for the loan year on CRSP and COMPUSTAT, respectively. The sample period for

---

[2] I thank Laura Field for providing firm age data. These data come from various sources and are described in Field and Lowry (2008), footnote 2.

loan deals is one year longer than the sample period for IPO firms to ensure that

information on loan deals for at least one year after the initial public offering is included

in the analysis. I record which IPO firms borrow from the banks within one year from the

IPO offer date and which IPO firms borrow from the banks any time prior to the IPO.[3]

While some firms get several loans within the first year from the IPO date, only the first

loan is considered in this analysis. Out of 3,218 IPO firms, 765 initiate at least one loan

agreement within one year from the initial public offering. I refer to these firms as "IPO

Borrowers". IPO firms that do not borrow from the banks within one year after the IPO

are labeled as "Non-borrowers". I find that 28% of all IPO firms borrow from the banks

prior to going public.

Table I presents sample descriptive statistics on the number of IPOs and IPO

borrowers, IPO offer details, and bank loan characteristics. The results are reported for

the overall sample and are also delineated by IPO year. The average firm in the sample

raised about US$50 million in net IPO proceeds and had 26% first-day return. The

median firm raised over US$26 million, with the median initial return of 10%. The time

trend in the number of IPOs, IPO proceeds, and initial IPO returns is consistent with

previous studies and shows a well-documented fact that IPOs in the late 1990s – early

2000s were large IPOs with high first-day returns (see, for example, Ritter and Welch

(2002), Loughran and Ritter (2004)).

Almost a quarter of IPO firms (24%) borrows large amounts from the banks

within one year after a firm's IPO. The average bank loan is $84 million, which is 1.7

times larger than the average amount raised through the initial public offering. The

---

[3] I examine loan deals starting in 1980 (the first year Dealscan data are available) to determine whether an
IPO firm borrowed from the banks prior to the initial public offering.

median loan amount is over $30 million, which is also larger than $26 million raised by a median firm through the IPO. These statistics suggest that a significant portion of firms relies heavily on bank loans after taking the company public.

The time trend in loan frequency and loan characteristics is also noteworthy. By the end of the sample period, which is characterized by large IPO proceeds and high initial returns, the proportion of IPOs receiving bank loans drops to less than 13%. However, firms borrow large amounts during these years, with the mean loan amount peaking at $181 million (median = $34 million) in 2000.[4] All-in spread drawn, provided by Dealscan, measures the amount the borrower pays in basis points over LIBOR for each dollar drawn down. It includes the spread of the loan and any annual or facility fee paid to the bank group. The mean all-in spread drawn equals 208 points (median = 200) for the overall sample and reaches the highest level in 2000 with the average value of 257 basis points (median=255).

Table I presents interesting results that many IPO firms borrow large amounts from the banks soon after the initial public offering. Table II further examines bank loan characteristics. For comparison, loans during the same time period to "seasoned" firms, i.e., firms that have been publicly trading for longer than a year, are also included in the analysis. The stated purpose of the loan is similar across IPO firms and seasoned firms, with corporate purposes stated most often (35% of IPO loans), followed by debt repayment (25% of IPO loans), and working capital needs (16% of IPO loans). A larger fraction of loans to IPO firms are secured and/or sponsored, suggesting that IPO firms have stricter loan agreements than do seasoned firms. For example, 60% of loans to IPO firms compared to 49% of loans to seasoned firms are secured. In addition, 8% of loans

---

[4] I replicate the main results of the study excluding IPOs in "unusual" years, i.e., 1999 and 2000.

to IPO firms are sponsored, compared to 3% sponsored deals to seasoned firms. The Standard and Poor's credit rating at the close of the loan deal is not available for over eighty percent of the sample, but when available, is slightly higher for seasoned firms than for IPO firms.

In further analysis, unreported in the Table, I find that IPO and seasoned firms have the same number of lenders – four lenders per loan deal, on average, and one lender per loan deal for the median firm. The cost of the loan, measured by all-in spread drawn, is lower for IPO borrowers than for seasoned borrowers. The median IPO firm borrows at 200 basis points, while the median seasoned firm borrows at 225 basis points over LIBOR. This difference is statistically significant at the 10 percent level.

Overall, the comparison of loan characteristics suggests that IPO firms get at least as favorable terms of the loans as do firms with longer history of public trading. IPO firms seem to have somewhat stricter security and sponsorship requirements, but they get lower loan cost than do seasoned firms.

III.   Borrowers vs. Non-Borrowers: Differences in Firm and Offer Characteristics

A.   *Univariate Analysis*

I first examine whether IPO firms that borrow from the banks soon after the initial public offering are different from other IPOs. Table III presents univariate comparison of firm and offer characteristics of IPO borrowers and non-borrowers. All accounting measures are from COMPUSTAT for the year immediately prior to the IPO year. Since about a third of IPO borrowers receive loans within three months of the initial public offering, the arbitrary choice of pre-IPO year ensures that firm characteristics are not

affected by the bank loan examined in the following analysis. Data on 178 firms are not available prior to IPO year. Out of these, 38 firms borrow from the banks within one year from the IPO date. For these 178 firms I collect accounting variables for the IPO year. The main results that follow in the paper do not change if I omit these firms from the analysis.

Table III shows that IPOs that borrow from the banks soon after the initial public offering are quite different from other IPOs. IPO borrowers are much larger (as measured by firm's assets and sales), have higher leverage (measured by debt to assets ratio), and carry higher level of inventory relative to total assets. These firms are more profitable (measured by return on assets), and invest more in tangible assets (measured by the ratio of property, plant, and equipment to total assets). In contrast to non-borrowers, IPO borrowers invest a smaller portion of capital expenditures in research and development.

Offer characteristics of IPO borrowers are also different from those of non-borrowers. IPO borrowers are older at the time when they go public, are less likely to be backed by venture capitalists, have lower initial returns, and higher net IPO proceeds. Moreover, 52% of IPO firms that receive bank loans within one year from the IPO have bank loans prior to the initial public offering, compared to 21% of IPOs that do not receive bank loans. Finally, fewer IPO borrowers are in the technology industry.

B. Multivariate Analysis

Results presented in Table III indicate that there are significant differences in firm and offer characteristics between IPO borrowers and non-borrowers. To examine which firm characteristics are associated with the probability that a firm borrows within the first

year after going public, I estimate the multivariate logit model. The goals of this analysis are: (1) to see whether the univariate results presented above still hold when additional variables are simultaneously taken into consideration, and (2) to provide a quantitative estimate of the effects of these variables on the likelihood of getting a loan by an IPO firm.

I estimate the following model:

Pr(IPO Loan)=f(Ln (Assets), Total Debt/ Total Assets, PPE / Total Assets, ROA,

Inventory /Total Assets, R&D/Capital Expenditures, Ln (Age), Ln (Net IPO Proceeds),

Initial Return, Price Run-Up, Tech, VC-backed, Pre-IPO Loan, Year Dummies) (1)

The dependent variable, *IPO Loan,* equals one if IPO firm borrows from a bank within the first year after going public and equals zero otherwise. f(.) is the cumulative distribution function of a standard normal variable. The definitions of all right-hand side variables are provided in the Appendix.

Table IV presents the results of the logit model estimation. Overall, independent variables are significant in explaining the outcome variable, as the *p*-value of the likelihood ratio test is less than 0.001. *Ln (Assets)*, *Total Debt / Total Assets*, *ROA*, *Inventory / Assets*, *Ln (Net IPO proceeds)*, *Pre-IPO Loan* have positive and significant effects on the probability that IPO firm borrows within one year from the IPO date. *R&D/Capital Expenditure* and *Tech Industry* have significant negative effects. Other variables, such as, *Ln (Age)*, *VC-backed*, *Initial Return*, and *Price Run-Up* are not significant in explaining the probability that an IPO firm borrows from a bank soon after

an IPO. Dummy variables for IPO years are included in the analysis but are not reported in the Table.

The odds ratio estimates, which equal e^{β}, indicate which variable has the largest effect on the probability of getting a loan within one year after going public. Firms that have bank loans prior to going public increase the odds of getting a loan within one year after an IPO by about 2.7 times compared to firms that do not have bank loans prior to going public. The percentage change in the odds ratio for each one unit of change in the continuous variable can be calculated as 100*(odds ratio-1). An increase in one unit of *Inventory / Total Assets* increases the odds of getting a loan by 134 percent. Similarly, an increase in one unit of *ROA* increases the odds that an IPO firm borrows from a bank by 84 percent.

Overall, Table IV indicates that large, profitable, levered, non-technology, pre-IPO bank borrowers borrow from the banks soon after the initial public offering.

IV.   Market Reaction to Bank Loan Announcements

In this section I examine whether banks, through their lending activity, reduce information asymmetry about IPO firms. Banks are given access to private information as the result of personal, continuing business relations. They produce information about a borrowing firm using information-gathering technology and through the process of thoroughly scrutinizing the borrower.[5] Banks incorporate this information in their lending decisions. When lending decisions become publicly available, they provide

---

[5] Leland and Pyle (1977) suggest that the primary reason for the existence of intermediaries is information asymmetry. Campbell and Kracaw (1980) show that financial intermediaries become information producers due to the complimentary nature of their services. See also Black (1975), Kane and Malkiel (1965), and Diamond (1984).

signals to the market about a borrower's creditworthiness. Mikkelson and Partch (1986), James (1987), and many others document that the announcements of bank loan agreements generate significantly positive abnormal returns to the borrowers. Subsequent studies examine differences in loan announcement returns for different loan types, borrowers' and lenders' characteristics.[6] This study examines loan announcement returns to a different type of borrower – a new public firm.

To perform this analysis, I search Factiva (formerly Dow Jones Newswire) for dates when loans to IPO firms were publicly announced. Most loans are announced right around the loan date, but to make sure that I record the announcements that do not follow a standard timeframe, I check for the loan announcements during three months prior to and during three months after the loan deal. The bank loan agreements are publicly announced for 257 out of 765 firms. I then screen these announcements for confounding news related to other corporate events, such as mergers and acquisitions, earnings and dividends, issue of public debt or secondary stock. Of 257 announcements, 77 have confounding news, reducing my sample to 180 observations.

The abnormal return is defined as the raw return on a given stock minus the return on CRSP value-weighted market index. *CAR (-1, +1)* is the cumulative abnormal return over the three day (-1,+1) event window, where day 0 is the loan announcement date. Three-day cumulative abnormal returns for the entire sample and for various sub-samples are reported in Table V.

---

[6] Lummer and McConnell (1989) find that loan renewals are associated with significant market reaction, while new bank loans do not communicate any additional information. Best and Zhang (1993) conclude that banks do not apply equal efforts in evaluating all borrowers but instead rely on other sources of information when evaluating the creditworthiness of a firm. They show that reaction to loan announcements is related to the creditworthiness of the borrower. Abnormal returns are also associated with the quality of the lender (Billett, Flannery, and Garfinkel (1995)), the nature of the lender (Byers, Fraser, and Shockley (1998)), the bank specialization according to different risk profiles (Carey, Post, and Sharpe (1998)), and the number of banks in the lending syndicate.

For the entire sample, the announcement returns are close to zero (mean=0.01%). This result is inconsistent with earlier studies that document significant positive returns (e.g., James (1987)) but is consistent with recent study by Fields et al. (2006). In unreported analysis I find that the announcement returns are not equal across all firms; they are significantly positive for 89 firms and are significantly negative for 91 firms. Apparently, investors consider bank loans as positive news for some firms and consider them as negative news for other firms.

To provide some perspective on differences in the responses to loan announcements, I calculate and compare mean abnormal returns for various firm categories. Consistent with Fields et al. (2006), I find that bank loan announcements are more positive for smaller and worse performing firms. The mean three-day abnormal return to firms with total assets below sample median (smaller firms) is 0.16%, while that to firms with total assets above sample median (larger firms) is -0.13%. The mean three-day loan announcement abnormal return to firms with ROA below sample median (poorer performance) is 1.3%, while the mean loan announcement abnormal return to firms with ROA above sample median (better performance) is -1.37%. Furthermore, bank loan announcements are more positive for younger firms: 0.41% for firms younger than the sample median (six years) versus -0.43% for firms that are older than the sample median. These findings provide some support for the view that IPO firms with greater information asymmetry and uncertainty, i.e., smaller, younger, and poorer performing firms, benefit from a bank's monitoring and certification.

I further examine the differences in loan announcement returns between firms with different IPO characteristics. IPO firms with a lower level of underpricing

experience higher returns around the bank loan announcement date than IPO firms with a

higher level of underpricing. As reported in Table V, the mean abnormal return to firms

with the initial returns below the sample median is 1.21%, while the mean abnormal

return to firms with the initial returns above sample median is -1.18%. This difference is

significant at the five percent level and could be attributed to the fact that there is less

information production through media sources and analysts following of "non-hot" IPOs,

the ones with the low first-day abnormal returns. Hence, these firms benefit from

information production and monitoring associated with bank lending.

V.   Borrowers vs. Non-Borrowers: Post-IPO Performance

In this section I examine whether bank lending is associated with superior post-

IPO long-term performance of firms that borrow soon after the IPO. If banks monitor the

performance of borrowing firms, IPO firms that borrow from the banks should perform

better than non-borrowers. To test this hypothesis, I examine three measures of post-IPO

performance: changes in operating performance, long-term stock performance, and firm

survival rates. Fama (1985) argues that banks have a cost advantage over other outsiders

in producing and transferring information and may enhance a borrowing firm's value by

reducing information asymmetries or by monitoring firm performance.

A.   Changes in Operating Performance after the IPO

I first investigate whether a firm's post-IPO operating performance is related to a

firm's borrowing soon after the initial public offering. Operating performance is

measured as operating return on assets (ROA), which equals to operating income divided

by the book value of total assets. I examine raw and industry-adjusted changes in ROA measured from the IPO year through each of the five years following the IPO. The raw change in ROA for IPO firm i from the year of the IPO (year 0) to year t is

$$\Delta ROA_{i,(0,t)} = ROA_{i,,t} - ROA_{i,0.} \qquad (2)$$

The industry-adjusted change in ROA controls for the contemporaneous change in firm i's industry and is measured as firm i's change in ROA minus the industry median change in ROA on the same date. The industries are based on four digit SIC codes if there is a minimum of five non-IPO firms, else three digits SIC codes, or two digit SIC codes until there are at least five non-issuing firms. The industry-adjusted change in ROA for IPO firm i from the year of the IPO (year 0) to year t is

$$Adjusted\ \Delta ROA_{i,(0,t)} = (ROA_{i,,t} - ROA_{i,0})$$

$$- (Industry\ Median\ ROA_{i,,t} - Industry\ Median\ ROA_{i,0}). \qquad (3)$$

Data to compute changes in ROA through the first post-IPO year are available for 2,906 of the IPO firms, declining to 1,723 firms for the five-year change in ROA.

Table VI reports the mean values of raw and of industry-adjusted changes in ROA measured through each of the five years following the IPO. Consistent with prior studies, operating performance declines over all examined time intervals (see, Friedlan (1994), Jain and Kini (1994), Mikkelson, Partch, and Shah (1997), Field and Karpoff (2002)). As shown in Panel A, the mean change in raw ROA from the IPO year to the following year is -0.051, with a t-statistic of -12.45. The mean change from the IPO year to year 2 post IPO is -0.069, with a with a t-statistic of -13.46. Operating performance levels off after year 2, as the average changes in raw ROA through years 3, 4, and 5 remain at around -0.06.

Panel B shows that industry-adjusted changes in ROA are also significantly negative for the first five years after the IPO. From the IPO year to the following year it is -0.039 with a *t*-statistic of -9.20. From the year of the IPO to years 2 and 3 it is -0.05 and levels off to -0.04 for years 4 and 5 after the IPO.

Table VI also reports differences in raw and industry-adjusted changes in operating performance. The results indicate that for periods shortly after the IPO, changes in operating performance tend to be less negative for firms that borrow from the banks within one year from a firm's IPO. For example, from the year of the IPO to the following year, the mean adjusted change in ROA is -0.046 for non-borrowing firms, compared to -0.016 for borrowing firms. This difference is significant at the 1 percent level and narrows, starting in year 3. By year 5 after the IPO year, the difference in ROA changes between IPO borrowers and non-borrowers disappears. Thus, over the (0,5) interval, the mean industry-adjusted change in ROA is -0.035 for non-borrowing firms, compared to -0.036 for borrowing firms. In sum, these findings suggest that banks contribute to better operating performance of IPO firms during up to three years following the initial public offering.

Table VII provides additional support for this finding. It reports the results of ordinary least squares regression of industry-adjusted changes in ROA measured through two years after the initial public offering on the presence of IPO loan and other firm characteristics. *IPO Loan* is an indicator variable which equals one if an IPO firm borrows from a bank within one year after its IPO and equals zero otherwise. Other variables, such as, *Tobin's Q*, *Ln (Age)*, *Ln (Net IPO Proceeds)*, *Initial Return*, *VC-backed*, and *IPO Year Dummies* (not reported) are included to control for firm and offer

characteristics. As shown in Table VII, borrowing from a bank within one year after the initial public offering has a significant positive effect on changes in industry-adjusted operating performance.

B.   Post-IPO Stock Performance

I then investigate another measure of firm performance – post-IPO long-run stock returns. Table VIII reports monthly buy-and-hold returns for one, two, and three years after the initial public offering date for IPO borrowers and non-borrowers. Raw returns (*BH Raw*) and returns adjusted for value-weighted (*BHVW*) and equally-weighted (*BHEW*) CRSP index are presented for all three years. For firms that do not survive for a given year after a firm's IPO, monthly returns up to the last available return are considered.

Results presented in Table VIII show that IPO borrowers perform better than non-borrowers in each time period considered. For example, IPO firms that borrow from the banks within one year from a firm's IPO outperform non-borrowing IPOs by 14% (using CRSP value-weighted benchmark) during two years after the initial public offering. While the difference in buy-and-hold abnormal returns between IPO borrowers and non-borrowers is statistically significant over one- and two-year post-IPO time period, it is not statistically significant over the three-year time period.

Table IX provides additional support for this finding. It reports the results of ordinary least squares regression of the two-year buy-and-hold abnormal return (adjusted for value-weighted CRSP return) on the presence of IPO loan and other firm characteristics as in Table VII. Consistent with evidence presented in Table VIII,

borrowing from a bank soon after the IPO has a positive effect on long-term stock performance of a borrowing IPO firm.

3.   Survivorship Status

I also examine listing status 3 and 5 years post-IPO for IPO borrowers and non-borrowers. I first define "survived" firms as firms that are not delisted due to bankruptcy or financial distress. There are no differences in survival rates between firms that borrow from the banks within one year after a firm's IPO and firms that do not borrow: 75.56% of IPO borrowers survive three years after the IPO date versus 75.62% of non-borrowers.

This result does not change when I consider other possible scenarios. For example, in addition to delisting due to the financial distress, I incorporate mergers and acquisitions in my analysis to reflect the fact that some firms are acquired to avoid the bankruptcy procedures. The difference in delisting status between borrowers and non-borrowers is still small. I also examine sub-samples that are likely to have high degree of information asymmetry and uncertainty about their future performance. Thus, I examine differences in survival rates between borrowers and non-borrowers excluding firms that borrow prior to the IPO, excluding firms that are backed by venture capitalists, or concentrating on firms that are in the lowest assets' quartile.

In summary, I do not find any evidence that borrowing from a bank within one year after a firm's IPO affects a firms' survival rate. This finding suggests that I do not encounter a survivorship bias when I compare the long-term performance of IPO borrowers and non-borrowers.

VI.   Conclusion

This study examines bank loans to new public firms. IPO borrowers are defined as firms that borrow from the banks within one year after a firms' IPO. I compare firm and offer characteristics and post-IPO performance of IPO borrowers and non-borrowers to determine whether bank lending provides additional information about IPO firms and improves firm performance.

The main findings can be summarized as follows. First, almost a quarter of IPO firms borrow large amounts (greater than net IPO proceeds, on average) from the banks soon after the initial public offering. The terms of bank loans to IPO borrowers are comparable to the terms of bank loans to firms with longer history of public trading.

Secondly, IPO borrows are quite different from non-borrowers. In comparison to non-borrowers, IPO borrowers are larger, have higher leverage, higher profitability, and raise larger amounts at the IPO. IPO borrowers are not likely to be from a technology industry and have established banking relations prior to the initial public offering.

Thirdly, the analysis of bank loan announcements provide some support for the hypothesis that banks reduce information asymmetry and monitor performance of IPO borrowers. The average three-day abnormal return around the loan announcement date equals zero, however, half of the sample firms elicit negative returns, while half of the firms elicit positive returns. Firms that are likely to have higher levels of asymmetry and uncertainty about their performance seem to benefit from bank loans. For example, smaller IPO firms elicit more positive returns than larger IPOs. Firms with poorer performance, measured by operation return on assets, experience higher returns than

firms with better performance measures. Furthermore, IPO firms with lower first-day stock returns elicit higher returns at the loan announcement than other IPO firms.

Furthermore, I find that bank lending is associating with better post-IPO performance. Even though all IPO firms show decrease in post-IPO operating performance (measured by ROA), IPO borrowers experience significantly lower decreases in operating performance during up to three years after the IPO than non-borrowers. Additionally, I find that firms that borrow from the banks within one year after a firm's IPO experience better long-term stock performance up to three years post-IPO than firms that do not borrow soon after the IPO. However, I do not find any evidence that bank lending affects the survival rate of IPO firms as there is no difference in delist status between IPO borrowers and non-borrowers.

Appendix: Variable Definitions

Firm Characteristic	Description
	Source: All variables, unless stated otherwise, are from COMPUSTAT Industrial Annual
Total Assets	data6
Ln (Assets)	natural logarithm of total assets
Sales	data12
Total Debt / Total Assets	leverage ratio (data9+data5)/data6
PPE / Total Assets	tangible assets - property, plan, and equipment to total assets data7/data6
ROA	return on assets - net income to total assets data13/data6
CA / CL	current assets over current liabilities data4/data5
Inventory / Total Assets	data3/data6
Receivables / Total Assets	data2/data6
NWC / Total Assets	net working capital to total assets (data4-data5)/data6
R&D / Capital Expenditures	research and development expense to capital expenditures Data46/data30
Tobin's Q	market value of equity plus total debt, divided by total assets (data24*data25+data9+data5)/data6
Age	Firm age (in years) from the date of incorporation to the IPO date. See, Field and Lowry (2008) for detailed explanation of data sources.
Ln (Age)	natural logarithm of firm age
Tech Industry	An indicator variable that equals 1 for firms in the technology industry (defined based on four digit SIC codes listed in Loughran and Ritter (2004)) and 0, otherwise.

Offer Characteristics	Description
	Source: SDC New Issues database
Net IPO Proceeds	the amount, in million dollars, raised by a firm through the initial public offering, minus the total fees paid
Venture Capital	An indicator variable that equals one if an IPO firm was backed by a venture capitalist at the time of IPO and equals zero, otherwise.
Price Run-up	the percent difference between the offer price and the midpoint of the initial filing range
Initial Return	the percent difference between the first after-market closing price (from CRSP) and the offer price

Loan Characteristics	Description
	Source: Dealscan, Loan Pricing Corporation
Loan Amount	the amount borrowed from a bank, adjusted for inflation and reported in real 1990 million dollars
Pre-IPO Loan	An indicator variable that equals one if a company had a bank loan prior to public trading and equals zero otherwise.
All-In Spread Drawn	measures the amount the borrower pays in basis points over LIBOR for each dollar drawn down and includes the spread of the loan and any annual or facility fee paid to the bank

References

Berlin, M., and J. Loeys, 1988, Bond Covenants and Delegated Monitoring, *Journal of Finance* 43, 397-412.

Bernanke, B., 1983, Nonmonetary Effects of the Financial Crisis in Propagation of the Great Depression, *American Economic Review* 73, 257-276.

Best, R., and H. Zhang, 1993, Alternative Information Sources and the Information Content of Bank Loans, *Journal of Finance* 48, 1507-1522.

Billett, M., M. Flannery, and J. Garfinkel, 1995, The Effect of Lender Identity on a Borrowing Firm's Equity Return, *Journal of Finance* 50, 699-718.

Billett, M., M. Flannery, and J. Garfinkel, 2006, Are Bank Loans Special? Evidence on the Post Announcement Performance of Bank Borrowers, *Journal of Financial and Quantitative Analysis* 41, 733-751.

Black, F., 1975, Banks Funds Management in an Efficient Market, *Journal of Financial Economics* 2, 323-340.

Blackwell, D., and D. Winters, 1997, Banking relationships and the effect of monitoring on loan pricing, *Journal of Financial Research* 20, 275-289.

Boot, A., 2000, Relationship Banking: What Do We Know? *Journal of Financial Intermediation* 9, 7-25.

Campbell, T., and W. Kracaw, 1980, Information Production, Market Signalling, and the Theory of Financial Intermediation, *The Journal of Finance* 35, 863-882.

Diamond, D., 1984, Financial Intermediation and Delegated Monitoring, *Review of Economic Studies* 51, 393-414.

Diamond, D., 1991, Monitoring and Reputation: The Choice between Bank Loans and Directly Placed Debt, *Journal of Political Economy* 99, 689-721.

Fama, E., 1985, What's Different about Banks?, *Journal of Monetary Economics* 10, 10-19.

Field, L., and J. Karpoff, 2002, Takeover Defenses of IPO Firms, *The Journal of Finance* LVII, 1857-1889.

Field, L. and M. Lowry, 2008, Institutional versus individual investments in IPOs: The importance of firm fundamentals, *Journal of Financial and Quantitative Analysis*.

Friedlan, J., 1994, Accounting Choices of Issuers of Initial Public Offerings, *Contemporary Accounting Research* 11 (Summer), 1-23.

Helwege J., and N. Liang, 1996, Financing Growth after the IPO, Journal *of Applied Corporate Finance* 8, 73-83.

James, C., 1987, Some Evidence of the Uniqueness of Bank Loans, *Journal of Financial Economics* 19, 217-235.

Jain, B. and O. Kini, 1994, The Post-Issue Operating Performance of IPO Firms, *Journal of Finance* 49, 1699-1726.

Jain, B., and O. Kini, 1999, On Investment Banker Monitoring in the New Issue Market, *Journal of Banking & Finance* 23, 49-84.

Kane, E., and B. Malkiel, 1965, Bank Portfolio Allocation, Deposit Variability, and the Availability Doctrine, *Quarterly Journal of Economics* 79, 113-134.

Leland, H., and D. Pyle, 1977, Information Asymmetries, Financial Structure and Financial Intermediaries, *Journal of Finance* 32, 371-387.

Loughran, T., and J. Ritter, 2004, Why has IPO underpricing increased over time? *Financial Management*.

Loughran, T., and J. Ritter,, 2002, Why don't issuers get upset about leaving money on the table in IPOs? *Review of Financial Studies* 15, 413-443.

Lummer, S., and J. McConnell, 1989, Further Evidence on the Bank Lending Process and the Capital Market Response to the Bank Loan Agreements, *Journal of Financial Economics* 25, 99-122.

Mikkelson, W., and M. Partch, 1986, Valuation Effects of Securities Offerings and the Issuance Process, *Journal of Financial Economics* 15, 31-60.

Mikkelson, W., M. Partch, and K. Shah, 1997 , Ownership and operating performance of companies that go public, *Journal of Financial Economics* 44, 281-307.

Ongena, S., and D. Smith, 2000, Bank Relationships: A Review, In *Performance of Financial Institutions,* Cambridge University Press*.*

Pagano, M., F. Pannetta, and L. Zingales, 1998, Why do Companies Go Public? An Empirical Analysis, *The Journal of Finance* 13, 187-221.

Rajan, R., and H. Servaes, 1997, Analyst Following of Initial Public Offerings, *The Journal of Finance* LII, 507-529.

Ritter, J., 2002, Investment Banking and Securities Issuance, In *Handbook of the Economics of Finance,* Amsterdam: North Holland.

Schenone, C., 2004, The Effect of Banking Relationships on the Firm's Cost of Equity in its IPO, *Journal of Finance* 59, 2901- 2958.

Sunder, J., 2002, Information Production in Stock Markets and Cost of Bank Debt, Working Paper, Cornell University.

Teoh, S-H., I. Welch, and T.J. Wong, 1998, Earnings management and the long-run performance of initial public offerings, *Journal of Finance* 53, 1935-1974.

Table I
Sample Descriptive Statistics

The sample includes 3,218 U.S. firms that went public during 1990-2000. *IPO Borrowers* are 765 IPO firms that borrow from the banks within one year from the firm's IPO. IPO data are from SDC, bank loan data are from Dealscan, and stock performance data are from CRSP. *Net IPO Proceeds* and *Loan Amount* are adjusted for inflation and are reported in real 1990 million dollars. Variable definitions are provided in the Appendix.

IPO Year	Number of IPOs	Net IPO Proceeds Mean [Median]	Initial Return (%) Mean [Median]	Number of IPO Borrowers	Loan Amount Mean [Median]	All-In Spread Drawn Mean [Median]
1990	68	37.33	8.08	19	85.59	201.25
		[23.43]	[5.72]		[20.00]	[255.00]
1991	175	42.20	12.13	41	91.19	234.71
		[24.94]	[7.50]		[15.33]	[255.00]
1992	270	38.98	10.76	70	46.78	241.21
		[22.40]	[4.36]		[23.16]	[250.00]
1993	350	33.74	12.07	101	63.61	209.46
		[22.46]	[6.13]		[35.78]	[200.00]
1994	291	29.38	9.84	72	67.23	187.78
		[19.33]	[4.81]		[32.13]	[175.00]
1995	322	40.65	21.00	67	110.47	199.67
		[24.70]	[12.54]		[23.35]	[200.00]
1996	476	41.22	16.83	127	100.78	209.68
		[25.97]	[10.00]		[30.38]	[200.00]
1997	355	39.34	13.67	113	68.08	186.44
		[23.69]	[8.90]		[23.16]	[175.00]
1998	214	77.02	23.16	61	139.00	192.26
		[26.78]	[9.47]		[56.47]	[175.00]
1999	383	77.25	72.98	54	156.73	212.08
		[37.34]	[38.75]		[39.89]	[212.50]
2000	314	84.76	58.09	40	181.36	256.69
		[43.31]	[28.14]		[33.78]	[255.00]
Total	3,218	49.59	25.93	765	84.05	208.00
		[26.47]	[10.00]		[30.31]	[200.00]

Table II
Distribution of Loans to IPO Firms and Seasoned Firms
by Loan Purpose, Structure, and Firm's Credit Rating

The sample includes U.S. firms that borrowed from the banks during 1990-2001. IPO Firms are 765 firms that went public during 1990-2000 and borrowed from the banks within one year after the IPO. Seasoned firms include 5,358 non-IPO firms that borrowed from the banks during 1990-2001 and have common stock return and accounting data for the loan year available on CRSP and COMPUSTAT, respectively. IPO data are from SDC. Data on borrowers, loan characteristics, and borrowers' credit ratings are from Dealscan. Panel A reports the distribution of loans by loan purpose. Panel B reports the distribution of loans by loan structure. Panel C presents the distribution of Standard and Poor's credit ratings for borrowing firms.

Loan or Firm Characteristic	Proportion of Loans with a Given Characteristic (in percent)	
	IPO Firms (N=765)	Seasoned Firms (N=5,358)
Panel A: Loan Purpose		
Corporate Purposes	35	37
Debt Repayment	25	22
Working Capital	16	16
Recapitalization	6	3
Acquisition Line	6	5
Takeover	6	7
Other	6	10
Panel B: Loan Structure		
Secured	60	49
Unsecured	13	12
Unavailable (for secured / unsecured)	27	39
Sponsored	8	3
Not Sponsored	92	97
Panel C: Standard & Poor's Credit Ratings		
AAA	0	0
AA	0	1
A	1	4
BBB	2	4
BB	6	3
B	5	3
CCC or lower	1	1
Unavailable	85	84

Table III
Differences in Firm and Offer Characteristics between IPO Borrowers and Non-Borrowers

The sample includes 3,218 U.S. firms that went public during 1990-2000. *IPO Borrowers* are 765 IPO firms that borrow from the banks within one year from the firm's IPO. IPO data are from SDC, bank loan data are from Dealscan, accounting data are from COMPUSTAT, and stock performance data are from CRSP. All accounting variables are measured at the fiscal year-end immediately prior to the IPO year. *Net IPO Proceeds* are adjusted for inflation and are reported in real 1990 million dollars. Variable definitions are provided in the Appendix.

Firm Characteristics	Overall Sample Mean [Median]	IPO Borrowers Mean [Median]	Non-Borrowers Mean [Median]	*t*-statistic for the difference in Means [Medians]
Total Assets (1990 real $, mln)	169.27	447.44	82.51	364.93***
	[18.08]	[47.28]	[14.52]	[32.76]***
Sales (1990 real $, mln)	155.52	378.87	85.86	293.01***
	[20.71]	[52.70]	[15.33]	[37.37]***
Total Debt / Total Assets	0.60	0.67	0.58	0.09***
	[0.56]	[0.65]	[0.52]	[0.14] ***
PPE / Total Assets	0.36	0.44	0.33	0.11***
	[0.26]	[0.35]	[0.24]	[0.11] ***
ROA	-0.05	0.11	-0.10	0.21***
	[0.11]	[0.15]	[0.09]	[0.05] ***
CA / CL	1.74	1.59	1.78	-0.19**
	[1.34]	[1.31]	[1.34]	[-0.03]

(continues)

Table III (continued)

Firm Characteristics	Overall Sample Mean [Median]	IPO Borrowers Mean [Median]	Non-Borrowers Mean [Median]	*t*-statistic for the difference in Means [Medians]
Inventory / Total Assets	0.12	0.16	0.11	0.05***
	[0.04]	[0.07]	[0.03]	[0.04]***
Receivables / Total Assets	0.20	0.20	0.20	0.00
	[0.17]	[0.16]	[0.17]	[-0.01]
NWC / Total Assets	0.08	0.09	0.08	0.01
	[0.12]	[0.10]	[0.14]	[-0.03]**
R&D / Capital Expenditures	1.01	0.47	1.18	-0.71***
	[0.09]	[0.00]	[0.34]	[-0.34]***
Age	13.55	18.08	12.10	5.98***
	[7.00]	[9.00]	[7.00]	[2.00]***
VC - backed	0.42	0.31	0.46	0.14***
	[0.00]	[0.00]	[0.00]	
Tech Firm	0.21	0.10	0.25	-0.15***
	[0.00]	[0.00]	[0.00]	

(continues)

28

Table III (continued)

Firm Characteristics	Overall Sample Mean [Median]	IPO Borrowers Mean [Median]	Non-Borrowers Mean [Median]	t-statistic for the difference in Means [Medians]
Pre-IPO Loan	0.28	0.52	0.21	0.32***
	[0.00]	[1.00]	[0.00]	[1.00]***
Initial Return (%)	25.93	16.41	28.90	-12.48***
	[10.00]	[7.50]	[10.71]	[-3.21]***
Price Run-Up (%)	-1.48	-4.22	-0.63	-3.59***
	[0.00]	[0.00]	[0.00]	[0.00]***

*** and ** indicate significance at the 1% and 5% levels, respectively.

Table IV
Logit Model of the Probability of IPO Firms Borrowing from a Bank
after the Initial Public Offering

The sample includes 3,218 U.S. firms that went public during 1990-2000. Out of these, 765 firms borrowed from the banks within one year from the IPO. The dependent variable, *IPO Loan,* equals one if the IPO firm borrowed from a bank within the first year after going public, and it equals zero otherwise. IPO data are from SDC, bank loan data are from Dealscan, accounting data are from COMPUSTAT, and stock performance data are from CRSP. All accounting variables are measured at the fiscal year-end immediately prior to the IPO year. Year Dummy variables are included but not reported. Odds ratio equals e^{β}. Variable definitions are provided in the Appendix.

Variable	Coefficient Estimate	Chi^2	Odds Ratio Estimate
Ln (Assets)	0.193***	12.851	1.212
Total Debt / Total Assets	0.310***	8.772	1.363
PPE / Total Assets	0.181	1.545	1.199
ROA	0.611***	11.422	1.842
Inventory / Total Assets	0.853***	7.624	2.346
R&D / Capital Expenditure	-0.112***	6.636	0.894
Ln (Age)	-0.068	1.957	0.935
Ln (Net IPO Proceeds)	0.193**	4.913	1.212
Initial Return	0.000	0.008	1.000
Price Run-Up	-0.392	2.383	0.675
Tech Industry	-0.363**	4.958	0.695
VC-backed	-0.061	0.308	0.940
Pre-IPO Loan	0.983***	91.961	2.671
Intercept	-3.155***	53.796	
Wald Chi^2	347.580***		

*** and ** indicate significance at the 1% and 5% levels, respectively.

Table V
Loan Announcement Abnormal Returns

Sample consists of 180 bank loan announcements during 1990-2001. Only loans within one year after the IPO are included. Mean cumulative abnormal returns (CAR) are calculated net of CRSP value-weighted index for (-1, +1) event window, where day 0 is the announcement day. Various firm categories are formed based on sample median values of a given variable. IPO data are from SDC, bank loan data are from Dealscan, accounting data are from COMPUSTAT, and stock performance data are from CRSP. Variable definitions are provided in the Appendix.

	Number of Firms	Mean CAR (-1, +1)	t-statistic
All Firms	180	0.01	[0.02]
Total Assets > $70.322 million	90	-0.13	[-0.23]
Total Assets <= $70.322 million	90	0.16	[0.16]
Difference in Means		-0.29	[-0.25]
ROA > 0.127	87	-1.37	[-1.68]
ROA < = 0.127	93	1.30	[1.58]
Difference in Means		-2.67	[-2.30]**
Age (>6)	81	-0.43	[-0.48]
Age (<=6)	88	0.41	[-0.48]
Difference in Means		-0.84	[-0.68]
Initial Return > 7.021%	90	-1.18	[-1.20]
Initial Return < = 7.021%	90	1.21	[1.95]
Difference in Means		-2.39	[-2.06]**
Price Run-UP > 0	75	-0.62	[-0.60]
Price Run-UP < = 0	105	0.46	[0.68]
Difference in Means		-1.08	[-0.91]
VC-backed: No	117	-0.63	[-0.86]
VC-backed: Yes	62	1.31	[1.34]
Difference in Means		-1.95	[-1.58]
Pre-IPO Loan: No	91	0.69	[0.84]
Pre-IPO Loan: Yes	89	-0.68	[-0.82]
Difference in Means		1.37	[1.17]

** indicate significance at the 5% level.

Table VI
Changes in Operating Performance after the IPO

Average changes in return on assets (ROA) are reported for each of five years after the IPO. The sample includes U.S. firms that went public during 1990-2000. IPO Borrowers are IPO firms that borrow from the banks within one year after a firm's IPO. Non-Borrowers are IPO firms that do not borrow from the banks within one year after a firm's IPO. Panel A reports the mean raw change in ROA, measured as operating income divided by the book value of total assets from the year of the IPO through each of five years post-IPO. Panel B reports the mean industry-adjusted change in ROA, measured as the raw change minus the contemporaneous change in industry median ROA for the same time period. IPO data are from SDC, bank loan data are from Dealscan, accounting data are from COMPUSTAT. t-statistics are in parentheses.

	Change in ROA Measured through				
	Year 1	Year 2	Year 3	Year 4	Year 5
Panel A: Raw Change in ROA					
All Firms	-0.051	-0.069	-0.066	-0.054	-0.055
	(-12.45)***	(-13.46)***	(-11.02)***	(-8.30)***	(-7.35)***
IPO Borrowers	-0.060	-0.078	-0.073	-0.058	-0.058
	(-11.53)***	(-12.08)***	(-9.55)***	(-6.88)***	(-5.99)***
Non-Borrowers	-0.024	-0.040	-0.045	-0.044	-0.047
	(-4.99)***	(-6.76)***	(-7.09)***	(-6.74)***	(-6.68)***
Difference in Means	-0.035	-0.038	-0.028	-0.014	-0.011
	(-5.01)***	(-4.33)***	(-2.83)***	(-1.29)	(-0.91)
Panel B: Industry-Adjusted Change in ROA					
All Firms	-0.039	-0.052	-0.050	-0.039	-0.035
	(-9.20)***	(-10.17)***	(-8.37)***	(-6.01)***	(-4.64)***
IPO Borrowers	-0.046	-0.059	-0.055	-0.041	-0.035
	(-8.66)***	(-9.25)***	(-7.20)***	(-4.88)***	(-3.63)***
Non-Borrowers	-0.016	-0.029	-0.036	-0.036	-0.036
	(-3.19)***	(-4.52)***	(-5.48)***	(-4.77)***	(-4.12)***
Difference in Means	-0.030	-0.031	-0.019	-0.005	0.001
	(-4.04)***	(-3.39)***	(-1.91)*	(-0.41)	(0.10)
Number of Firms	2,906	2,570	2,251	1,976	1,723

*** and * indicate significance at the 1% and 10% levels, respectively.

Table VII
OLS Regression of Post-IPO Changes in Operating Performance

The sample includes 2,228 U.S. firms that went public during 1990-2000. The dependent variable is *Change in Industry-adjusted ROA*, measured from IPO year through 2 years post IPO. *Industry-adjusted ROA* is defined as net income divided by total assets for the IPO firm minus the industry median net income divided by total assets on the same date, where the industries are based on 4 digit SIC codes if there is a minimum of at least 5 non-issuing firms, else 3 digits SIC codes, or 2 digit SIC codes. *IPO Loan* equals one if an IPO firm borrows from a bank within the first year after going public, and it equals zero otherwise. IPO year dummy variables are included in the regression but not reported. IPO data are from SDC, bank loan data are from Dealscan, accounting data are from COMPUSTAT, and stock performance data are from CRSP. *t*-statistics are provided in parentheses.

Variable	Coefficient Estimate
Intercept	-0.219
	(-5.52)***
IPO Loan	0.030
	(2.41)**
Tobin's Q	0.010
	(5.02)***
Ln (Net IPO Proceeds)	0.015
	(2.58)**
Ln (Age)	0.005
	(0.94)
Initial Return	0.000
	(0.87)
VC-backed	0.008
	(0.73)
Adjusted R^2 (%)	2.34

*** and ** indicate significance at the 1% and 5% levels, respectively.

Table VIII
Buy-and-Hold Returns One, Two and Three Years after the IPO

The sample includes 3,218 U.S. firms that went public during 1990-2000. IPO Borrowers are IPO firms that borrow from the banks within one year after a firm's IPO. Non-Borrowers are IPO firms that do not borrow from the banks within one year after a firm's IPO. *BH Raw Returns* are buy-and-hold firm returns, in percent. *BHVW* are buy-and-hold firm returns, in percent, adjusted for contemporaneous CRSP value-weighted returns. *BHEW* are buy-and-hold firm returns, in percent, adjusted for contemporaneous CRSP equally-weighted returns. All returns are measured through 1, 2, and 3 years after a firm's IPO. IPO data are from SDC, bank loan data are from Dealscan, accounting data are from COMPUSTAT, and stock performance data are from CRSP.

Performance Measure	IPO Borrowers	Non-Borrowers	Difference
1-year post-IPO			
BH Raw Returns	117.96	103.82	-14.14***
BHAR (Value-Weighted)	2.29	-9.18	-11.47***
BHAR (Equally-Weighted)	5.35	-9.17	-14.52***
2-years post-IPO			
BH Raw Returns	133.40%	112.39	-21.00***
BHAR (Value-Weighted)	-0.16%	-14.34	-14.18%*
BHAR (Equally-Weighted)	5.71%	-13.87	-19.58%**
3-years post-IPO			
BH Raw Returns	134.49%	119.61	-14.88%*
BHAR (Value-Weighted)	-14.93%	-20.17	-5.23%
BHAR (Equally-Weighted)	-6.50%	-18.11	-11.61%

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table IX
OLS Regression of Abnormal Returns Two Years after the IPO

The sample includes 3,218 U.S. firms that went public during 1990-2000. The dependent variable is a firm's buy-and-hold abnormal return, adjusted for contemporaneous CRSP value-weighted return, measured through two years following the initial public offering. *IPO Loan* equals one if an IPO firm borrows from a bank within the first year after going public, and it equals zero otherwise. IPO year dummy variables are included in the regression but not reported. IPO data are from SDC, bank loan data are from Dealscan, accounting data are from COMPUSTAT, and stock performance data are from CRSP. *t*-statistics are provided in parentheses.

Variable	Coefficient Estimate
Intercept	-0.925
	(-2.86)***
IPO Loan	0.343
	(3.37)***
Tobin's Q	0.313
	(18.31)***
Ln (Net IPO Proceeds)	0.014
	(0.30)
Ln (Age)	-0.010
	(-0.25)
Initial Return	-0.001
	(-1.42)
VC-backed	0.220
	(2.47)**
Adjusted R^2 (%)	15.91

*** and ** indicate significance at the 1% and 5% levels, respectively.