

Do VCs Provide More Than Money? Venture Capital Backing & Future Access to Capital

Donald Flagg*, Speros Margetis** and Chris Ramirez***

The long-run benefits Venture Capitalists (VCs) provide have been discussed in literature but empirical results based on stock returns have yielded inconclusive results. Brav and Gompers (1997) is one of the few papers which show moderate outperformance of VC-backed firms in terms of long-run returns. In fact, several papers seem to focus on the long-run benefits VCs provide but few have shown concrete evidence of these benefits. Brav and Gompers (1997) hypothesize several reasons why VCs should improve long-run performance. In this paper we examine one of the potential long-run benefits VCs provide, which is better access to capital. Using a sample of just under 1,500 IPOs during the time period from 1990-2000, this paper shows IPO firms with venture backing have better access to capital than non-VC backed IPOs three years and up to five years after their initial IPO date. Venture backed IPO firms access equity markets more frequently than non-venture backed IPO firms and raise around 14.5 million more dollars on average over a five year window.

JEL Code: G24

1. Introduction

The role of Venture Capitalists (VCs) remains a heavily contested issue. Many researchers agree VCs provide valuable services to the companies in which they invest, but current research comes up short in providing empirical evidence to the existence of such services. The role of VCs has often been examined at the time of the IPO. If VCs provide benefits to the IPO firm through increased monitoring (Barry, Muscarella, Peavy, and Vetsuypens, 1990) or certification (Megginson and Weiss, 1991), underpricing should be reduced for VC-backed IPOs as investors will recognize the added benefits of a VC-backed IPO. Evidence illustrating a beneficial role of VCs as marked by lower underpricing at the time of the IPO has been mixed at best. In fact, new evidence indicates VC-backed IPOs have higher risk-adjusted underpricing than non-VC-backed IPOs.¹

This study quantifies the role VCs play in the performance of newly public firms after their IPO. That is, do VCs provide any long-term identifiable benefits to the firms in which they take an equity stake in or do VCs simply provide capital? To date, studies measuring the long-run performance by VC-backed IPOs have yielded vastly different results.² In fact, very few papers if any have provided any clear empirical long-term benefits provided by VCs.

*Dr. Flagg is an Associate Professor at the John H. Sykes College of Business in the Department of Finance at the University of Tampa. Email: dflagg@ut.edu

**Dr. Margetis is an Associate Professor at the John H. Sykes College of Business in the Department of Finance at the University of Tampa. Email: smargetis@ut.edu

***Chris Ramirez is a graduate student at the John H. Sykes College of Business in the Department of Finance at the University of Tampa

Flagg, Margetis & Ramirez

The goal of the study is to provide some evidence about the long-run benefits of VCs. We hypothesize that venture capital backing leads to better access to capital after the IPO date. The intuition behind this result is VC-backed firms will gain valuable knowledge of capital markets through their VC investments in firms going public. VCs provide access to capital by putting hard dollars into the firm before the IPO and then provide valuable insight into capital markets, which leads to better access to capital after the IPO.

To further this intuitive notion we examine Brav and Gompers (1997). They list three major reasons why VC-backed IPOs might differ from non-VC-backed IPOs. First, VCs implement management structures helping the firm perform better. VCs are also thought to use their industry expertise to improve the firm's operations also serving on the firm provide valuable information about raising capital, something VCs do regularly. Second, VCs might affect who holds the firm's shares after an IPO. More large investors will hold shares of VC-backed IPOs because VCs have contacts with large investment banks. Third, VCs obtain positions on the board of directors of the start-up firms and retain the positions long after the IPO. Having VCs on the board provides board members with experience in raising capital. These three benefits VCs provide certain could help increase future ability to raise capital over time.

We test our hypothesis that VCs can improve access to capital empirically by examining the firm level of financial constraint three years after the IPO date. Financial constraint measures the ability of a publicly traded firm to finance their positive NPV projects. If venture backing provides better access to capital than IPO firms with venture backing should be less financially constrained than non-VC backed IPO firms. We use a three-year window after the IPO date of the firm to show a long run benefit of venture capital. Our results show VC backing improves the IPO firms' future access to capital as they are less financially constrained as measured by different metrics. VC-backed IPO firms are found to have lower KZ scores, lower debt ratios, and have a much greater probability of being financial unconstrained three years after the IPO. We also find that venture backed firms access the equity markets more over the time period three and five years after the IPO date than non-venture backed firms. Venture backed firms also raise higher amounts of money through equity markets after the IPO date. These results are all consistent with our hypothesis that VC-backed firms have better access to capital after their IPO.

The paper proceeds as follows. Section two presents the related literature and implications to the firm with venture backing. Section three describes the data and methodology used. Section four discusses the empirical results. Section five concludes the paper and includes limitations of the research.

2. Related Literature and Implications

Firm's access to capital is of extreme importance. The lack of ability to raise funds or reasonably priced funds negatively effects firm value. The recent literature on financial constraints points out financially constrained firms finds it difficult or extremely expensive to raise capital for valuable growth opportunities. Fazzari, et al. (1988), Kaplan and Zingales (1997), Cleary (1999) along with others examine the

Flagg, Margetis & Ramirez

financing needs of firms. The financial constraints literature has implied information costs and the internal resources of a firm influence the cost of external funds. The challenge is to identify “constrained” and “unconstrained” firms at a particular point in time. Lamont, et al (2001) use the results from Kaplan and Zingales (1997) logit regressions to build a measure that evaluates the firm financial constraint called the KZ index.

Each firm has a KZ index score based on factors, which make it harder or more expensive to raise capital. Higher KZ index scores mean a higher financial constraint. Debt ratio is also shown as a measure of firm level financial constraint in Whited (1992) and Whited and Wu (2006). Higher debt ratios especially as compared to other firms in the industry leads to firms that are more constrained. If VCs improve the ability of firms to access to capital than VC-backed IPOs should have lower KZ index scores and lower debt-to-asset ratios.

3. Methodology

3.1 Data

The data collection process for this paper includes the following stages: First, all IPOs for the time period 1990–2000 were identified through Securities Data Exchange (SDC). Information taken from SDC include IPO characteristics such as offer date, offer price, closing price, underwriter ranking, net proceeds, net revenues, and a dummy variable illustrating venture backing. The dummy variable representing venture funding has been corrected in a few areas where venture funding existed but was not marked as a venture-backed firm. IPOs with a venture flag but no venture capital firm were detected and eliminated from the sample. This yields a sample of 1,466 IPOs over the eleven year period analyzed.

Problems with the SDC venture backing flag have been identified in Ljungqvist and Wilhelm (2003). Information on the founding date of the firms included in the IPO sample was obtained from Jay Ritter’s website. This variable is from the Field-Ritter dataset of company founding dates, as used in Field and Karpoff (2002) and Loughran and Ritter (2004). The founding date is used to obtain the age of the firm at the time of its IPO. Firm age is calculated as the IPO date minus the founding date. After finding the stock returns, the next stage is finding the variables from the Compustat database for the first three years of firm’s operations for the variables needed to calculate both the KZ Index and debt to income ratios. We also track the five years after the IPO date to find if any firm in the sample issue equity, filed bankruptcy, or was acquired by another firm.

3.2 Variables Used in Regressions and Motivation For Them

This section will define the variables used in our analysis. A brief definition of the variables is provided in Table 1. Following is a detailed description of the variables along with the motivation for the choice of each variable.

Flagg, Margetis & Ramirez

3.2.1 Access to Capital

It is hypothesized VCs will increase firms' access to capital markets. The first variable utilized to estimate the firms' ability to raise capital is the KZ Index. The KZ Index measures the financial constraint of firms. Higher KZ scores imply higher levels of financial constraint and vice versa.³ The KZ index has been winzorized at the top and bottom 1% level to eliminate the bias caused by extreme KZ scores, which lowers the total sample to 1,438 total IPOs. The second variable to measure access to capital is a financial constraint dummy variable. This variable classifies a firm as financially constrained based on having KZ scores in the highest one-third of the sample. Using a dummy variable eliminates the need to winzorize the data and increases the sample back to 1,466 as the KZ scores simply take a value of either zero (not financially constrained) or one (financially constrained). Debt ratio is also shown as a measure of firm level financial constraint in Whited (1992). Debt ratio is measured as the total amount of debt divided by total assets.

Equity offerings both three years and five years after the IPO date are measured to see if venture backed IPO firms issue equity more often than their non-venture counterparts. We create dummy variables for both time periods to examine if the IPO firms issued equity for three or five years after their IPO date. Total equity size is also measured for each IPO firm. This represents the total amount of equity raised by the firm for five years after the IPO in millions of dollars.

3.2.2 Individual IPO Characteristics

This section discusses the variables used to identify the characteristics of the different firms at the time of their IPO. VC (the primary variable of interest) will be a dummy variable measuring whether or not the IPO firm had venture funding at the time of the IPO. Log age is the natural log of the age of the firm at the time of the IPO, controlling for the stability and risk of the firm. Log proceeds is used to measure the size of the IPO and proxy for the size of the overall firm. Prestigious underwriter variable is a dummy variable measuring whether or not the firm used a prestigious underwriter for the IPO. Chemmanur and Fulghieri (1994) argue investors use the investment banks' past performance, as measured by the quality of firms in which they previously sold equity, to access their creditability.

Underwriters who sell equity in firms with better long-run performance will build their reputation. Carter, Dark, and Singh (1998) examine the theory and find the long-run performance of IPOs is positively affected by the reputation of the underwriter. Houge, et al. (2001) argues flipping affects long-run performance and could impede access to capital. To control for flipping underpricing will be used as a control variable. Underpricing is measured as the change in price on the first-day of trading (offer date) for the IPO. This variable will identify if underpricing affects long-run performance. The IPO characteristics will be used to control for the differences in the firms at the time of the IPO.

Flagg, Margetis & Ramirez

Table 1
Variables Used in Regressions

DEPENDENT VARIABLES USED

- | | |
|-------------------------|--|
| 1. KZ Index | Index measures the financial constraint of firms. Based on the work of Kaplan and Zingales (1997) and Lamont, Polk and Saa-Requejo (2001). |
| 2. Financial Constraint | A dummy variable representing the lowest third or the most constraint firms in the sample based upon the KZ Index. |
| 3. Debt-to-Asset Ratio | The ratio of a firms debt to assets. |
| 4. Equity Offering 3 | A dummy variable equaling one if the firm issued equity up to three years after the IPO date and zero if not. |
| 5. Equity Offering 5 | A dummy variable equaling one if the firm issued equity up to five years after the IPO date and zero if not. |
| 6. Equity Total 5 | The total amount of equity offered by firms up to five years after the IPO date. |
| 7. Bankruptcy | A dummy variable equaling one if the firm went bankrupt up to three years after the IPO and zero if not. |

INDEPENDENT VARIABLES USED

- | | |
|-------------------|--|
| 1. VC | A dummy variable signifying venture funding. A value of 1 represents venture funding. |
| 2. Log Age | The natural log of the firm's age at the time of the IPO. Firm age is measured as IPO date – founding date. |
| 3. Log Proceeds | The natural log of total proceeds from the IPO to the firm. |
| 4. Prestigious UW | Dummy variable given if the lead underwriter firm for the IPO has a rank of 8 or above. |
| 5. Underpricing | The initial (first-day) return for the IPO. Underpricing is calculated as the percentage change in price from the offer price to the closing price of the stock on the first day of trading. |
-

4. Results

4.1 Descriptive Statistics

This section describes the difference in means between venture and non-venture backed IPOs. Table 2 displays the mean and number of observation for the entire sample as well as the sub sample of both venture backed and non-venture backed IPOs. Also shown are the differences between the two groups of IPOs and the significance of those differences. Panel A examines the means and differences in means between the venture backed and non-venture back samples at the time of the IPO. For the sample of 1,466 IPO firms 46.5% of the IPO firms have venture capital funding. The average characteristics for the entire sample of IPO firms are 109 million in total assets, underpricing of 23.7%, firm age of about 14 years, offer price of \$12.21, and underwriter grade of 7.38. As mentioned, panel A also looks at the difference between the two types of IPOs. The difference between the two groups show total assets and firm age are significantly greater for non-venture backed IPOs, while underpricing, offer price, and underwriter grade is significantly greater for venture backed IPOs. The amount of proceeds is insignificantly larger for the venture sample. The significant differences between the IPO characteristics illustrate the major differences between the two types of IPOs.

Panel B of table 2 shows the means for the entire sample and the breakdown of venture backed and non-venture backed IPOs for different measures three years after the IPO. Total assets and sales are significantly larger for the non-venture backed sample, showing the average size is larger for non-VC-backed IPOs. The next three variables measure access to capital. First, the KZ index is shown and the sample is slightly lower with a total sample of 1,438 IPOs as it has been winzORIZED at the top and bottom 1% level. The comparison of the KZ index shows venture backed IPOs have significantly lower KZ scores than non-venture backed IPOs. This leads to a lower financial constraint for VC-backed IPO firms and thus better access to capital.

The second variable to measure access to capital is the financial constraint dummy, which classifies a firm as financially constrained based on having KZ scores in the highest third (higher KZ scores equal more constrained firms). Using a dummy variable eliminates the need to winzORIZE the data and increases the sample back to 1,466. Venture backed IPOs have a 17.2% less probability of being considered financially constrained using this dummy variable for financial constraint as compared to non-venture backed firms. The third measure examined is the firm's debt-to-asset ratio. Venture backed IPOs have a significantly lower debt ratio. All three measures indicate that venture backed IPOs have significantly less financially constrained than non-venture backed IPOs. The result is consistent with the fact VCs increase the firm's ability to access capital markets.

Table 2
Descriptive Statistics for the Sample of 1,466 IPOs (1990-2000)

The table looks at the descriptive statistics for the whole sample, IPOs with no venture backing, and IPOs with venture backing. Table 1 defines all of the variables shown in the descriptive statistics. Difference is defined as the sample of non-venture backed IPOs subtracted by venture backed IPOs. Tests were run on the difference between the two samples to test if they were different from each other. P-values from these tests are shown in the last column.

Panel A: Time of the IPO

Variable	Full Sample	No Venture	Venture	Difference	P- value
Number of IPOs	1466	769	697	72	
Total Assets	109.01	116.33	100.93	15.40	0.02
Underpricing	0.237	0.160	0.321	-0.161	0.00
Proceeds	42.27	40.90	43.78	-2.88	0.20
Age	14.20	17.43	10.64	6.79	0.00
Offer Price	12.21	11.75	12.71	-0.952	0.00
Underwriter Grade	7.38	6.86	7.95	-1.09	0.00

Panel B: Three Years After the IPO

Variable	Full Sample	No Venture	Venture	Difference	P- value
Total Assets	160.82	178.55	141.25	37.31	0.00
Sales	150.80	179.48	119.16	60.32	0.00
KZ Index	-5.49	-3.47	-7.71	4.24	0.00
Financial Constraint	0.323	0.404	0.232	0.172	0.00
Debt / Asset	0.173	0.225	0.114	0.111	0.00

4.2 Regression Results

This section will explain the various regression results of the paper to examine access to capital. The first dependent variable used to measure firms' access to capital is the KZ-index, which measures the constraint a firm. Table 3 illustrates VC's influence on the access to capital for IPO firms. The smaller sample size of this first regression is due to the fact the KZ-index variable was winzorized at the 98% level, eliminating the lowest and highest 1% because of extreme values on these sides. The results using all of the data produces a similar conclusion but we show our results are not a cause of a few outliers. The results for the KZ index are shown in column (1) of table 3. The coefficient for the VC dummy variable is negative and significant showing the presence of a VC reduces the constraint of a firm and thus providing a better future access to capital for VC-backed IPOs. The coefficient for the prestigious underwriter dummy variable is also negatively significant to the KZ-index. Having a prestigious underwriter reduces the financial constraint level in firms. Log proceeds is significant with a positive coefficient as firms that raise more proceeds at the time of the IPO are more financially constrained as measured by the KZ index. Firm age and underpricing are insignificant to the KZ-index. The adjusted R-squared for the regression is 10.4%.

Flagg, Margetis & Ramirez

To avoid the loss of observations with extreme upper and lower values of the KZ index, a dummy variable was created for financial constraint. The dependent variable in column (2) is a dummy variable measuring financial constraint firms (based on the KZ index). Since a dummy variable is used as the dependent variable a probit model is used for column (2). The coefficient for the VC dummy variable is negative and significant showing venture funding at the time of the IPO reduces the probability a firm will be financially constrained. The result agrees with the results from column (1) using the raw KZ index. One major difference from the results from column (1) is the prestigious underwriters regression coefficient. Now the coefficient for prestigious underwriters is insignificant. Column (3) takes the other side of the picture and constructs a dummy variable for the firms that are the least financially constrained. A Probit model is used for this regression. The coefficient for the VC dummy variable has a positive and significant coefficient, showing that venture funding increases the likelihood that the firm will be financially unconstrained or the firm will have less frictions in accessing the capital markets. The major difference in the regression is now the coefficient for prestigious underwriters is positive and significant. This confirms the results from column (1) using the KZ index and shows that although prestigious underwriters do not decrease the likelihood of an IPO being financially constrained, they do increase the likelihood of the firm being financially unconstrained.

Column (4) uses a different variable to measure IPO firms' access to capital, the ratio of debt to assets. As with the other measures for access to capital, the VC dummy variable has a negative and significant coefficient. The variable shows VC-backed IPOs have significantly lower debt to asset ratios as compared to non-VC-backed IPOs after controlling for risk and industry, which is consistent with the results from the KZ measure. Prestigious underwriters and underpricing reduce the debt to asset ratio of IPO firms. The other variables used in the regression are insignificant. Year and industry dummy variables are used to control for different time periods and different industry types.

Flagg, Margetis & Ramirez

Table 3
Venture Capital and Access to Capital

The table examines the access to capital for the sample of 1,466 IPOs. Table 1 defines all of the variables used in the regressions. This table examines different variables measuring firm level of access to capital to determine how venture funding impacts future firm access to capital. The time horizon used is three years measuring the level of firm financial constraint or access to capital three years after the IPO. The P-values are shown in parentheses. The sample size for Column (1) is smaller because the 2% of the data has been winzorized. Columns (2) and (3) are probit regressions since the dependent variable is a dummy variable.

Dependent Variable	KZ Index	Financially Constrained	Financially Unconstrained	Debt Ratio
	(1)	(2)	(3)	(4)
VC Dummy	-1.665 (0.02)	-0.173 (0.04)	0.516 (0.00)	-0.035 (0.00)
Log Age	0.475 (0.19)	-0.016 (0.70)	-0.130 (0.01)	-0.008 (0.18)
Prestigious UW	-1.590 (0.05)	-0.021 (0.83)	0.199 (0.03)	-0.053 (0.00)
Log Proceeds	1.424 (0.05)	0.089 (0.31)	-0.221 (0.01)	-0.010 (0.46)
Underpricing	-1.143 (0.18)	-0.231 (0.10)	0.134 (0.15)	-0.026 (0.05)
Industry Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Constant	-2.697 (0.36)	-0.256 (0.72)	-0.376 (0.20)	0.117 (0.01)
Adj. R-squared	0.104	0.148	0.152	0.282
Observations	1438	1466	1466	1466

Table 4 takes this one step further by looking directly at probability of venture-backed IPO firms accessing capital markets in terms of a secondary equity offering (or SEO). The data points used for this table is reduced because the firm must have lasted five years after their IPO without being acquired or filing for bankruptcy, thus the sample is reduced to 877. Although the metrics discussed above demonstrate firms' ability to access capital in this table we see if venture backing increases the likelihood of a firm accessing the public equity market in the future. The results from table 4 agree with the results from table 3. Venture backed IPO firms are more likely to issue equity than their non-venture backed counterparts. Columns (1) and (2) both show the venture capital dummy variable as positive and significant.

In column (3) we measure the total amount of equity raised by the IPO firm for a five-year period after the IPO. We measure the total amount of equity dollars raised in terms one millions of dollars. We find that on average a venture backed IPO firm

Flagg, Margetis & Ramirez

will raise around 14.5 million more dollars of equity than a non-venture backed IPO firm. Again, year and industry dummy variables are used to control for different time periods and different industry types.

Table 4
Venture Capital and Future Equity Offerings

The table examines the access to capital for the sample of 877 IPOs, which had verifiable data about future equity offerings and were not purchased or liquidated. Table 1 defines all of the variables used in the regressions. This table examines different variables measuring if firms accessed the capital markets in terms of a future equity offering both three and five years after their IPO date to determine how venture funding impacts future equity offerings by IPO firms. Columns (1) and (2) examine if venture funding is significant in firms issuing equity over a three and five year window. A Probit model is used for both of these tests since the dependent variable is a dummy variable. Column (3) examines the total amount of equity issued over a five-year period by each IPO firm using an OLS regression model. The P-values are shown in parentheses.

Dependent Variable	Equity Offering 5	Equity Offering 3	Total Equity 5
VC Dummy	0.361 (0.00)	0.302 (0.00)	14.43 (0.05)
Log Age	-0.019 (0.67)	-0.003 (0.95)	0.667 (0.85)
Prestigious UW Dummy	0.262 (0.12)	0.246 (0.12)	15.00 (0.08)
Log Proceeds	0.129 (0.07)	0.096 (0.20)	22.14 (0.00)
Underpricing	-0.025 (0.86)	0.015 (0.91)	9.39 (0.39)
Industry Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Constant	-0.602 (0.10)	-0.620 (0.09)	-65.79 (0.02)
Adj R-squared	0.076	0.062	0.105
Observations	877	877	877

5. Conclusion

It seems to be widely accepted VCs improve the long-run performance of IPOs they take an equity stake in, but the empirical results have been lacking. This paper examines the role of VCs in the long-run performance of IPOs, and provides empirical evidence to the role of VCs. VCs improve IPO firms' access to capital. The paper shows this result using a couple of different measures for financial constraint, including KZ-Index and Debt/Ratio. We also show Venture Capital backing increasing the likelihood of IPO firms access the equity markets and at a larger

Flagg, Margetis & Ramirez

scale. Interestingly enough, VCs ended up providing the exact thing firms are looking for when they first seek out VC-funding, better access to capital. Some limitations of the study include the sample period selected, the elimination of part of the population due to restrictions of data, and the lack of availability of data to measure cost of equity financing.

Endnotes

¹ Early work including Barry, Muscarella, Peavy, and Vetsuypens (1990), Megginson and Weiss (1991), etc. has shown that VC-backing was negatively related to underpricing. In contrast, recent work including Lee and Wahal (2004) and Flagg, Qi and Wan (2012) have shown a much different result with VC-backing positively related to underpricing, perhaps due to grandstanding (Lee and Wahal, 2004) and spinning (Flagg, Qi and Wan 2012).

² Brav and Gompers (1997) show VC-backed IPOs as having performed marginally better than non-VC backed IPOs. Chan et al. (2005) examine the long-run performance of IPOs and find that for large sized IPOs that VC-backing is positively related to long-run stock performance. Campbell and Fry (2004) show no major difference in stock performance between VC-backed and non-VC-backed IPOs. Dolvin and Pyles (2005) find that VC-backing does not lead to better long-run performance.

³ The KZ Index measures constraints based on Kaplan and Zingales (1997) and classify firms according to this measure (known as the KZ Index). Specifically, following Lamont et al. (2001), construct an index of the likelihood that a firm faces financial constraints by applying the following columnarization to the data:

$$\text{KZ Index} = -1.002 * \text{CashFlow} + 0.283 * Q + 3.130 * \text{Leverage} - 39.368 * \text{Dividends} - 1.315 * \text{CashHoldings}$$

References

- Barry, Muscarella, Peavy, and Vetsuypens, 1990, 'The role of venture capital in the creation of public companies: Evidence from the going public process', *Journal of Financial Economics* 27, 447-472.
- Brav, Alon and Paul A. Gompers, 1997, Myth or reality? 'The long-run underperformance of initial public offerings: Evidence from venture and non-venture capital-backed companies', *Journal of Finance* 52, 1791 – 1821.
- Carter, Richard B., Frederick H. Dark and Alan K. Singh, 1998, 'Underwriter reputation, initial returns, and the long-run performance of IPO stocks', *Journal of Finance* 53, 285-311.
- Chemmanur, T. and P. Fulghieri, 1994, 'Investment bank reputation, information production, and financial intermediation', *Journal of Finance* 49, 57 – 79.
- Cleary, S., 1999, 'The relationship between firm investment and financial status', *Journal of Finance* 54, 673-692.
- Fazzari, S. and G. Hubbard, and B. Peterson, 1988, 'Investment and finance reconsidered', *Brookings Papers on Economic Activity* 19, 141 – 195.
- Field, Laura C., and J. Karpoff, 2002, 'Takeover Defenses of IPO Firms', *Journal of Finance* 57, 1857 – 1889.
- Flagg, D., J. Qi and H. Wan, 2012, 'What Drives The Underpricing of Venture Capital-backed IPOs?', *International Journal of Accounting Information Science & Leadership* 5, 1 - 14.
- Houge, T., T Loughran, Suckanek, and Yan, 2001, 'Divergence of opinion, uncertainty, and quality of initial public offerings', *Financial Management* 30, 5 – 23.

- Jain and Kini, 1995, 'Venture Capitalists Participation and the Post Operating Performance of IPO Firms', *Managerial and Decision Economics*, 16, 593 – 603.
- Kaplan, S. N. and L. Zingales, 1997, 'Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints?', *The Quarterly Journal of Economics*, 112, 169 - 215.
- Lamont, O., C. Polk, et al., 2001, 'Financial Constraints and Stock Returns', *The Review of Financial Studies* 14, 529 - 554.
- Lee, P and S. Wahal, 2004, 'Grandstanding, certification and the underpricing of venture capital backed IPO's', *Journal of Financial Economics*.
- Ljungqvist, A., and William J. Wilhelm (2003) 'IPO pricing in the dot-com Bubble', *Journal of Finance* 58. forthcoming.
- Loughran, T., and Jay Ritter, 2004, 'Why Has IPO Underpricing Increased Over Time?', *Financial Management* 33, 5-37.
- Meggison, W.L. and Weiss, K. 1991. 'Venture capitalists certification in initial public offerings', *Journal of Finance*, 46: 879-903.
- Whited, T. M., 1992, 'Debt, Liquidity Constraints, and Corporate Investment, Evidence from Panel Data', *Journal of Finance*, 47, 1425–1460.
- Whited, I M. and Wu, Guojun, 2006. 'Financial Constraints Risk', *The Review of Financial Studies*, Vol. 19, Issue 2, pp. 531-559.

