

What's in It for Me? Reciprocal Exchanges between Underwriters and Venture Capitalists

Douglas R. Miller
Tera L. Galloway
Dustin Smith

In this article, we examine the impact of repeat interactions between VCs and underwriters. Past research has suggested that such interactions build trust and may contribute to more equitable treatment of issuing firms. We adopt an alternative perspective and suggest that these repeat interactions are characterized by reciprocal exchanges facilitated by opportunistic behavior from the VC. Our analysis demonstrates that VCs and underwriters interact in order to appropriate greater value from the IPO. This article provides a more complete understanding of repeat interactions between the VC and the underwriter by identifying characteristics of the relationship that have an impact on the value of the IPO.

Keywords: repeat interactions, IPO, reciprocal exchanges, VC

Venture backing provides important resources for entrepreneurs as they progress through the stages of new venture startup (Jindra & Leshchinskii, 2015). In addition to financing, VC firms provide managerial expertise and guidance that has been shown to enhance start-up success (Jindra & Leshchinskii, 2015). Highly reputable VCs have been shown to be more successful in leading firms to an initial public offering (IPO) (Nahata, 2008). It is no surprise, then, that VC firms have a large presence in the IPO market. Nearly 40 percent of IPOs were venture backed over the time period 1994–2007. Despite the obvious benefits associated with venture backing, evidence has shown that venture-backed IPOs experience greater underpricing than non-venture backed IPOs (Lee & Wahal, 2004). Underpricing refers to the difference between the price at which shares are sold pre-IPO and the price at which the shares trade once issued to the market.

We adopt an agency perspective to explain the presence of reciprocal exchanges between underwriters and VCs. We suggest that top VCs establish reciprocal exchanges with underwriters as a way to gain more immediate access to investment gains through shorter lockup periods. VCs maintain portfolio firms that are growing toward a potential IPO. In order to appropriate the most value from an IPO event, VCs seek to issue shares at a high price with minimal underpricing. Such an approach benefits

both the entrepreneur and the VC: the entrepreneur because less money is left on the table, and the VC because they receive a higher return from their investment.

Top venture capitalists act, in a way, as gatekeepers of an underwriter's involvement in future IPOs. The influence that venture capitalists have on portfolio firms heavily impacts which underwriters are invited to participate. Following this logic, if an IPO is substantially underpriced, VCs are positioned to punish the underwriter by excluding them from future business with their IPO firms (Bradley, Kim, & Krigman, 2015). Despite this position to enact retributive justice, examinations show that VC firms do not actually punish underwriters for high underpricing. In fact, evidence shows that underwriters that engage in underpricing actually gain more access to IPO firms not less (Ritter & Welch, 2002). We attempt to explain why such relationships persist and to examine the possible implications for the entrepreneur.

Previous research has provided several explanations for underpricing, including, the belief that VCs agree to underpricing as payment for all-star analyst coverage (Bradley et al., 2015, 2011; Liu, Arthurs, Nam, & Mousa, 2013), that underpricing is the result of asymmetric information (Jenkinson & Jones, 2009), that it is a signal of issuing firm quality (Kennedy, Sivakumar, & Vetzal, 2006), a mechanism to intensify price momentum so that VCs can cash out at a higher price (Bradley et al., 2015), or that VC grandstanding encourages greater underpricing (Lee & Wahal, 2004). These positions do not fully explain why top VCs, which are capable of negotiating a successful public offering without relying heavily on underwriters, are willing to accept such high levels of underpricing.

In this article, we focus on repeat exchanges to explain the prevalence of underpricing of IPO firms. We suggest that VCs and underwriters engage in reciprocal exchanges, which present immediate benefits to both the VC and the underwriter, create greater trust, and contribute to the formation of long-term relationships. Additionally, we argue that when there is an established history between the VC and underwriter, and VCs act in their own self-interest the ex-

changes become more costly to the entrepreneurial firm when the proceeds from the IPO increase. Additionally, we suggest that VCs having higher reputations further exacerbate this behavior.

This article contributes to agency theory by providing insights on how self-interested intermediaries affect the IPO process. Agency costs associated with IPO have traditionally focused on underwriters and largely ignored self-interest seeking from the VC firm. Our study provides insight into how the most powerful VCs, those with substantial experience and a strong reputation, enhance their returns through increased underpricing and a shortened lockup. Our results make a practical contribution to entrepreneurs pursuing relationships with VC firms and provide a conceptual contribution to the IPO literature by highlighting the role that VCs play in underpricing decisions.

The IPO and Repeat Exchanges

Agency theory research has been used to examine conflicts of interest that occur between investors in mergers and acquisitions (Masulis & Nahata, 2009; Matvos & Ostrovsky, 2008) and, more recently, between parties involved in the analysis of VCs' portfolio firms approaching IPO (Jenkinson & Jones, 2009). Studies have shown that conflicts of interest do exist, but researchers have struggled to find direct evidence that shows that the IPO valuation and allocations are a result of these conflicts of interest (Reuter, 2006; Ritter & Zhang, 2007). As a result, discussions of agency issues in the IPO process are often focused more on the underwriter and incidences of underpricing than on the venture capital firms involved in moving the portfolio firm toward IPO.

In order to understand the impact that the intermediaries have on firms going through IPO, it is important to understand why firms choose to go through an IPO in the first place. There are a number of explanations to present as possible reasons for such a decision. Many firms choose to go public after recognizing the high-value market opportunities that exist. Successful entrepreneurial firms may reach a point where it is possible to establish a competitive advantage through a favorable market-to-book ratio. When these advantages are recognized, the likelihood of an IPO increases (Pagano & Panetta, 1998). As such, much of the decision making regarding whether to go through with an IPO is based on the market and whether the IPO will create the resources necessary to improve the firm's competitive position, especially considering the additional competitive pressures that issuing firms face from

incumbents in the market (Hsu, Reed, & Rocholl, 2010). Firms that have already established a competitive strategy and have achieved a sustainable performance are more likely to remain privately traded (Hsu et al., 2010).

Following IPO, the issuing firm is recapitalized, leading to a reduced debt-to-equity ratio, which increases the flexibility in the investments that the issuing firm is able to make. This suggests that firms choose to go public in order to gain access to the resources necessary for the IPO firm to respond more effectively to the changes in the market (Hsu et al., 2010). The IPO, by default, serves as a signal of high quality (Stoughton, Wong, & Zechner, 2001) and suggests that the issuing firm maintains greater stores of knowledge capital that present an advantage over competitors (Cockburn & Griliches, 1988).

Venture capitalists provide valuable capabilities to the firm during the IPO process, including the abilities necessary to manage venture growth efficiently, define strategic advantages, and identify high-value opportunities (Ivanov & Masulis, 2008). VCs also maintain necessary ties with other influential intermediaries, including the underwriters that have a consistent presence in the IPO market.

The motivations of all parties involved in the IPO are very similar. The new venture VC and the underwriter want to appropriate the greatest amount of value from the IPO process (He, Cordeiro, & Shaw, 2015). However, the long-term outcomes vary significantly for the parties involved. Repeat exchanges between the VC and the underwriter can create a situation where the bargaining power shifts to favor the VC and underwriter to the detriment of the entrepreneur. Despite the belief that the development of relationships can resolve these issues, a number of studies have shown a connection between misaligned incentives of equity underwriters and excessive IPO underpricing (Baron, 1982; Ljungqvist & Wilhelm, 2003; Loughran & Ritter, 2004; Loughran & Ritter, 2002; Nimalendran, Ritter, & Zhang, 2007; Reuter, 2006). Questions remain concerning this high level of underpricing and efforts have been made to explain why this underpricing would be accepted by the issuing firm and the VC firm that is backing the IPO.

We suggest that promised access to greater wealth incentivizes the VC firm to accept greater underpricing. Such agreements would suggest that reciprocal relationships between the VC and the underwriter indicate that agency costs may actually increase when partnering with VCs and underwriters that have an established long-term, trusted relationship. This perspective proposes that the lack of immediate trust between parties may actually benefit

the issuing firm because it will allow the market to assign firm value more accurately. Additionally, when repeat exchanges are a characteristic of the market, it is unlikely that breaches of conduct will occur from the beginning of the relationship because the loss of social capital would be too great (Molm, Schaefer, & Collett, 2007).

Hypothesis Development

The repeat interactions that occur between VCs and underwriters creates an environment that may increase agency costs to the entrepreneur. VCs have power in the selection of underwriters for their portfolio firms and, as a result, have the potential to create repeat relationships with underwriters that maximize their wealth appropriation. This relationship is further complicated by underwriters that are motivated to keep a strong relationship with venture capitalists in order to improve the likelihood that they will be selected to act as underwriters on future ventures that the VC firm has invested in. This motivation to build and keep strong ties means that investments banks reciprocate the benefits provided by the venture capital firm (Bradley et al., 2015). The establishment of long-term relationships between underwriters and venture capital firms can serve as an additional method for affecting the IPO process. This happens through two main channels.

First, relationships tend to reduce the information asymmetries through access to potentially private information that allows underwriters to better assess the quality of the VC's portfolio firms as well as gain a better understanding of the influence that the VC has in the decision making of portfolio firms. For instance, according to Baum and Silverman (2004), a VCs involvement in the IPO can act as a signal of quality when unambiguous measures of performance from other sources do not exist. Underwriters that have developed a lasting relationship with these VCs are in a more advantageous position to receive these signals and to capitalize on the information that is presented. This is especially true when the information provided by the VC is relevant for the evaluation of other firms in the VC's portfolio and is difficult for outsiders to gain access to.

Second, long-term relationships may impact the prevalence of agency issues in the transaction. VCs and underwriters have a long-term presence in the IPO market and must maintain relationships in order to gain access to new deals that can produce future revenue. The long-term nature of the relationship and the need to maintain strong moral capital would suggest that VCs would be more incentivized to provide accurate information to underwriters and underwriters would be more inclined to provide a fair appraisal of the offering.

Due to the lockup restriction imposed on VCs, wealth lost through underpricing is of less concern to the VC than the value of the stock when the lockup period expires. As a result, VCs are most interested in decreasing the lockup period so that they can benefit from investments more quickly. We propose that VCs agree to greater underpricing in exchange for the immediate reciprocation of a shortened lockup. Specifically, VC firms are desirous to capitalize on their investment more quickly and can only do so when the lockup expires (Bradley et al., 2015; 2011). We propose that the exchange central to the reciprocal exchanges agreement is the VC firm's acceptance of greater underpricing in exchange for a shorter lockup period.

Hypothesis 1: Greater underpricing will negatively impact the length of the lockup period.

An underwriter has an incentive to please its institutional investors by underpricing more so that they will be loyal for future deals. Institutional investors can buy at the offer price and then flip the shares for a profit at the end of the first trading day. In this situation, the institutional investors are rewarded for their loyalty and the pre-IPO investors receive much less capital from the offering (Arthurs, Hoskisson, Busenitz, & Johnson, 2008). Gains are most pronounced when investors are involved in a large offering that produces considerable financial benefit. As a result, underwriters are very interested in gaining access to high-value IPOs in order to maintain strong relationships with institutional investors. In order to gain access to a sizeable offering, underwriters will reciprocate by agreeing to a shorter lockup period. As a result, we argue that VCs will receive a shorter lockup when providing underwriters access to high-value IPOs. This is proposed in the following hypothesis:

Hypothesis 2: The size of the offering will be negatively related to the lockup period.

VC Reputation

A characteristic of the relationship between the VC and underwriter that has been largely ignored is the influence that VCs have in their portfolio firm's choice of underwriter (Ince, 2011). We propose that repeat interactions occur as a result of the VC's influence and underwriters that desire access to a specific VC's portfolio firms must offer incentives to the VC in the short term, not just in the rent generated after market.

Underwriters benefit from relationships with top venture capitalists because of the influence that

venture capitalists have on portfolio firms. The most active, reputable VCs, akin to top underwriters, have market power and underwriters maintain a strong relationship with these VCs by agreeing to shorter lockups. Importantly, these relationships are not defined by a single “deal” but persist over time. This long-term relationship means that incentives may actually occur at a future IPO rather than the current IPO. As a result, underwriters are motivated to maintain long-term relationships with highly reputable VCs in order to continue being selected as the portfolio firm’s underwriter. We argue that more reputable VCs will be consistently presented with a shorter lockup period as a result of their influential position over portfolio firms.

Hypothesis 3: The reputation of the VC firm will be negatively related to the length of the lockup period.

Methodology

Sample

To test these hypotheses, we collected a random sample of firms that went through an IPO between 1997 and 2007. We used the Securities Data Corporation (SDC) Platinum Database to identify these firms and gather supporting data. The SDC collects data from publicly available sources including newspaper and wire sources, SEC filings, trade publications, and firm prospectuses. Additionally, we used COMPUSTAT and CRSP to gather financial information. The final sample consisted of 236 U.S. IPO firms in the 31 different industries.

Measures

Dependent variables. Benefits to the venture capital firm are measured using the agreed upon lockup period. *Lockup* is defined as the agreement between current shareholders and the underwriter that prevents current shareholders from selling their shares of stock for a designated period of time following the IPO (Arthurs, Busenitz, Hoskisson, & Johnson, 2009). A single IPO firm may have different lockup period agreements with its underwriter, meaning that some shareholders face different restrictions from other shareholders. To accommodate for these differences in the lockup agreement, lockup period was calculated as a weighted average of the number of days covered by the restricted selling period (Arthurs et al., 2009). The formula is as follows:

$$\frac{(\text{Lockup period}_1 \times \text{Shares in lockup}_1) + (\text{Lockup period}_2 \times \text{Shares in lockup}_2)}{(\text{Shares in lockup}_1 + \text{Shares in lockup}_2)}$$

Constructing the variable in this fashion means that when, for example, there are four VCs in the syndicate and each has a different lockup, the lockup is calculated according to the impact that the lockup has. A VC with greater ownership and a shorter lockup would weigh the formula differently from a VC with less ownership and a shorter lockup. This approach is more appropriate for understanding the impact that lockup periods have on the firm and whether these lockup periods are a result of reciprocal agreements.

Independent variables. *Underpricing* is calculated as the price on the first day of trading minus the offer price divided by the offer price (Logue, Rogalski, Seward, & Foster-Johnson, 2002). *Underpricing* is the most prevalent measure of short-term IPO performance as it takes both the offer price and the stock price into account, while combining “the diverse perspectives of nearly every stakeholder group associated with the IPO context” (Certo et al., 2009, pp. 1363). *Size of Offering* is calculated as the number of shares issued during the initial public offering (Kennedy et al., 2006; Nam, Park, & Arthurs, 2014). *VC Reputation* was calculated using data available on Tim Pollock’s personal website (www.timothypollock.com/vc_reputation.htm).

Control variables. Following similar research, we include several control variables in order to account for alternative explanations (Certo, 2003). *Firm Age* and *Firm Size* were controlled using years since founding and the total employees of the firm at the time of the IPO (Carter & Manaster, 1990; Park & Patel, 2015). *Risk* was calculated as the total number of risk factors listed in the prospectus (Beatty & Zajac, 1994; Park & Patel, 2015). To control for the effect of previous lockup agreements between the underwriter and the VC, the *average lockup* was calculated by averaging the lockup length of each previous IPO that the underwriter and VC had worked on together. *Total History* refers to the reciprocal relationship between the VC and the underwriter and was calculated by examining the VC firm’s involvement in previous IPOs. Research suggests that reciprocal relationships can exist regardless of whether the VC in question is the “lead” investor. Therefore, the relationship was counted if the VC firm and underwriter were involved in an IPO together, regardless of what level of involvement the VC firm had. *Underwriter Reputation* was coded using data available on Jay Ritter’s personal website at the University of Florida. This data is based on the methodology employed by Carter et al. (Carter & Manaster, 1990; Carter, Dark, & Singh, 1998) and subsequently compiled and updated by Jay Ritter.

Table 1. Means, Standard Deviations, and Correlations

	Mean	S.D.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Lockup Days	215.49	135.26	1									
2. Firm Age	48.92	225.24	-.015	1								
3. Risk Factors	28.64	7.85	-.168**	.003	1							
4. Firm Size	928.3	2186.64	-.103	-.15	-.18	1						
5. Average Lockup	192.52	70.8	.051	-.014	-.01	.005	1					
6. Underpricing	.84	1.46	-.127*	.055	.12	-.044	-.036	1				
7. Size of Offering	42.22	33.66	-.323**	-.042	-.07	.592**	-.080	.042	1			
8. Total History	10.93	3.36	-.173**	-.047	.01	-.037	-.020	.192**	.014	1		
9. VC Reputation	.25	19.647	.037	.007	-.03	-.035	-.068	.104**	.002	.081	1	
10. UW Reputation	7.04	.233	-.555**	.086	.04	.138*	-.054	.180**	.419**	.309**	-.033	1

Notes: N = 236; * p<.05; **p<.01

Results

Table 1 presents the means, standard deviations and correlations of the key variables in the analysis. OLS regression analysis was used to test the hypotheses presented in the article. The presence of multicollinearity was examined by conducting a variance inflation factor analysis (Belsley, Kuh, & Welsch, 2005; Neter, Wasserman, & Kutner, 1985). This examination yielded no variables with scores higher than 10 (the highest score was 3.999), indicating that there are no problems of multicollinearity. Additionally, reports showed that skewness and kurtosis were within acceptable ranges.

Table 2 presents the results of the regression analysis. For simplification, we include only the key variables in our analysis. Model 1 shows the baseline results of regressing lockup on the control variables. Model 2 to Model 4 represent the full models testing Hypothesis 1 to Hypothesis 3.

Using Model 2 to examine Hypothesis 1, we found that the length of the lockup period is shorter when the IPO firms face greater underpricing, supporting Hypothesis 1. This indicates support for the belief that reciprocal exchanges exist between venture capitalists and underwriters. Hypothesis 2 suggests that the size of the offering will be negatively related to lockup. Overall, offering size had a significant negative effect on lockup period, providing support for Hypothesis 2. Hypothesis 3 was also supported, indicating that highly reputable VCs will be able to gain access to a shorter lockup period. This suggests that the value of the VC firm's portfolio firms has an impact on the behaviors and decisions that underwriters make.

Table 2. Results of Regression Analysis Predicting Lockup

	Model 1	Model 2	Model 3	Model 4
Control Variables				
Firm Age	-.015	-.008	-.022	-.031
Risk Factors	-.172**	-.169**	-.074	-.078
Firm Size	-.109	-.115	.103	.097
Average Lockup	.050	.046	.017	.020
UW Reputation	-.101	-.98	-.110	.133*
Total History	-1.023*	-.953*	-1.027*	-1.056
Independent Variables				
Underpricing		-.127*	-1.04†	-.082
Size of Offering			-.361**	-.356**
VC Reputation				-.489**
R ²	.043	.059	.133	.159
Adjusted R ²	.026	.039	.110	.130
F-Statistics	2.596*	2.884*	5.862*	5.374**
Change R ²	.043	.016	.074	.005
F-Statistics for Change	2.596*	3.906*	19.583**	1.289

Notes:

† p<.10

* p<.05

** p<.01

Discussion and Conclusion

Taken together, the results provide strong evidence that reciprocal exchanges are part of the interactions between VCs and underwriters. However, the long-term relationships that develop between underwriters and VCs appear to have exchanges that benefit the underwriter more than the VC. The results suggest that while VCs maintain access to their portfolio firms and that even highly reputable underwriters will offer incentives in the form of shorter lockups to gain access to the portfolio firms, these incentives change once the relationship has been established.

Our inquiry provides a contribution to the literature on information asymmetry as it relates to underpricing and also provides an understanding of the reciprocal exchanges between underwriters and VCs that impact the valuation of issuing firms. By examining the relationship history between the underwriter and the VC, we offer clear evidence to suggest that the establishment of trust may not provide the anticipated benefits to the issuing firm. Given the mediated nature of the IPO market, knowing the characteristics and background of the influential parties can be useful when seeking to maximize the long-term wealth of pre-IPO investors.

Overall, the results suggest that the VC's influence over portfolio firms creates a position of power that may not be long lasting. The establishment of reciprocal exchanges occurs as a result of the self-serving desires of the underwriter and the VC, but reputable underwriters are able to reclaim the power once the relationship has been established. It may be that underwriters that gain access to portfolio firms through the influence of the VC are able to present different incentives other than a shorter lockup period. Regardless of the long-term benefits, the exchanges characterized by immediate reciprocation end after reputable underwriters develop a relationship with the VC.

These results provide an interesting perspective on the power dynamics of the parties involved in the IPO process. These reciprocal exchanges indicate that IPOs exist in a double-mediated market and future exchanges are heavily influenced by the self-serving desires of the underwriter and VC. It is also interesting to note that these findings describe a

more subtle approach to market manipulation than has been recognized in the past. For example, in the late 1990s underwriters engaged in more overt tactics of market manipulation and were punished. In that situation, underwriters gave VCs buy-in to attractive IPOs as reciprocal exchanges for future IPOs (Smith, Grimes, Zuckerman, & Scannell, 2002). They also engaged in laddering activities wherein they required their institutional investors to purchase additional shares in the aftermarket to drive up the price of the shares in the focal IPO (after the shares were offered at a low price to start with) (Choi & Pritchard, 2004; Smith & Craig, 2004). Though these types of tactics have been resolved, it seems that underwriters and VCs are still behaving opportunistically but are simply doing a better job of covering their actions.

Limitations of this study point to several possible future research directions. First, the referenced time frame does not include many years that are characterized by high volatility. This suggests that our findings may have somewhat limited generalizability during incidents of economic turmoil. It would be interesting to further theorize and provide empirical evidence on whether agency costs increase during greater economic uncertainty. Second, we did not examine the impact that shorter lockup agreements have on the investment syndicate. Future work could determine whether VC syndicates receive equal benefits from these reciprocal exchanges or if the benefits are closely tied to ownership and relationship history. This level of nuance wasn't achieved in this study and would be an interesting extension for future research.

Finally, future research could examine precisely when the power dynamics of the relationship between the VC and the underwriter begin to change. By identifying the ideal relationship history, we would be better able to determine when the benefits from working with a trusted partner are eroded by opportunistic behavior. Future works such as these would be beneficial for understanding the nuanced exchanges among parties in the IPO process and would substantively contribute to both the entrepreneurship and new venture financing literature.

References

- Arthurs, J., Hoskisson, R., Busenitz, L., & Johnson, R. (2008). Managerial agents watching other agents: multiple agency conflicts regarding underpricing in IPO firms. *The Academy of Management Journal (AMJ)*, 51(2), 277–294.
- Arthurs, J. D., Busenitz, L. W., Hoskisson, R. E., & Johnson, R. A. (2009). Signaling and initial public offerings: The use and impact of the lockup period. *Journal of Business Venturing*, 24(4), 360–372.
- Baron, D. P. (1982). A Model of the Demand for Investment Banking Advising and Distribution Services for New Issues. *The Journal of Finance*, 37(4), 955–976.

- Baum, J. A. C., & Silverman, B. S. (2004). Picking winners or building them? Alliance, intellectual, and human capital as selection criteria in venture financing and performance of biotechnology startups. *Journal of Business Venturing*, 19(3), 411–436.
- Beatty, R. P., & Zajac, E. J. (1994). Managerial Incentives, Monitoring, and Risk Bearing: A Study of Executive Compensation, Ownership, and Board Structure in Initial Public Offerings. *Administrative Science Quarterly*, 39(2), 313–335.
- Belsley, D. A., Kuh, E., & Welsch, R. E. (2005). *Regression diagnostics: Identifying influential data and sources of collinearity* (Vol. 571): Wiley-Interscience.
- Bradley, D., Kim, I., & Krigman, L. (2015). Top VC IPO underpricing. *Journal of Corporate Finance*, 31, 186–202.
- Bradley, D. J., Kim, I., & Krigman, L. (2011). *Currying favor with top venture capital firms: The role of IPO underpricing and all-star coverage*. Paper presented at the Paris December 2012 Finance Meeting EUROFIDAI-AFFI Paper.
- Carter, R., & Manaster, S. (1990). Initial Public Offerings and Underwriter Reputation. *Journal of Finance*, 45(4), 1045–1067.
- Carter, R. B., Dark, F. H., & Singh, A. K. (1998). Underwriter Reputation, Initial Returns, and the Long-Run Performance of IPO Stocks. *The Journal of Finance*, 53(1), 285–311.
- Certo, S. T. (2003). Influencing Initial Public Offering Investors with Prestige: Signaling with Board Structures. *The Academy of Management Review*, 28(3), 432–446.
- Certo, S. Trevis., Holcomb, Tim R., Holmes, R. Michael. (2009). IPO Research in Management and Entrepreneurship: Moving the Agenda Forward. *Journal of Management*, 35(6), 1340-1378.
- Choi, S., & Pritchard, A. C. (2004). Should issuers be on the hook for laddering? An empirical analysis of the IPO market manipulation litigation.
- Cockburn, I., & Griliches, Z. (1988). *The Estimation and Measurement of Spillover Effects of R&D Investment-Industry Effects and Appropriability Measures in the Stock Market's Valuation of R&D and Patents*. Paper presented at the American Economic Review Papers and Proceedings.
- He, L., Cordeiro, J. J., & Shaw, T. S. (2015). CEO power, equity ownership and underwriter reputation as determinants of lockup period length. *Management Research Review*, 38(5), 438–458.
- Hsu, H.-C., Reed, A. V., & Rocholl, J. (2010). The New Game in Town: Competitive Effects of IPOs. *Journal of Finance*, 65(2), 495–528.
- Ince, O. (2011). Double Intermediation in IPOs: Double the Trouble? *Available at SSRN 1787401*.
- Ivanov, V., & Masulis, R. (2008). *Strategic alliances and corporate governance in newly public firms: Evidence from corporate venture capital*.
- Jenkinson, T., & Jones, H. (2009). IPO Pricing and Allocation: A Survey of the Views of Institutional Investors. *The Review of Financial Studies*, 22(4), 1477–1504.
- Jindra, J., & Leshchinskii, D. (2015). Venture Capital Valuation, Partial Adjustment, and Underpricing: Behavioral Bias or Information Production? *Financial Review*, 50(2), 173–219.
- Kennedy, D. B., Sivakumar, R., & Vetzal, K. R. (2006). The implications of IPO underpricing for the firm and insiders: Tests of asymmetric information theories. *Journal of Empirical Finance*, 13(1), 49–78.
- Lee, P. M., & Wahal, S. (2004). Grandstanding, certification and the underpricing of venture capital backed IPOs. *Journal of Financial Economics*, 73(2), 375–407.
- Liu, K., Arthurs, J. D., Nam, D., & Mousa, F.-T. (2013). Information diffusion and value redistribution among transaction partners of the IPO firm. *Strategic management journal*.
- Ljungqvist, A., & Wilhelm, W. J., Jr. (2003). IPO Pricing in the Dot-Com Bubble. *The Journal of Finance*, 58(2), 723 -752.
- Logue, Dennis E., Rogalski, Richard J., Seward, James K., & Foster-Johnson, L. (2002). What Is Special about the Roles of Underwriter Reputation and Market Activities in Initial Public Offerings? *The Journal of Business*, 75(2), 213–243.
- Loughran, T., & Ritter, J. (2004). Why Has IPO Underpricing Changed Over Time? *Financial Management (Blackwell Publishing Limited)*, 33 (3), 5–37.
- Loughran, T., & Ritter, J. R. (2002). Why Don't Issuers Get Upset About Leaving Money on the Table in IPOs? *Review of Financial Studies*, 15(2), 413–444.
- Masulis, R. W., & Nahata, R. (2009). Financial contracting with strategic investors: Evidence from corporate venture capital backed IPOs. *Journal of Financial Intermediation*, 18(4), 599–631.
- Matvos, G., & Ostrovsky, M. (2008). Cross-ownership, returns, and voting in mergers. *Journal of Financial Economics*, 89(3), 391–403.
- Molm, L. D., Schaefer, D. R., & Collett, J. L. (2007). The Value of Reciprocity. *Social Psychology Quarterly*, 70(2), 199–217.
- Nahata, R. (2008). Venture capital reputation and investment performance. *Journal of Financial Economics*, 90(2), 127–151.
- Nam, D.-i., Park, H. D., & Arthurs, J. D. (2014). Looking Attractive until You Sell: Earnings Management, Lockup Expiration, and Venture Capitalists. *Journal of Management Studies*, 51(8), 1286–1310.

- Neter, J., Wasserman, W., & Kutner, M. H. (1985). Applied linear statistical models: Regression, analysis of variance, and experimental designs. Homewood, IL: Richard D. Irwin: Inc.
- Nimalendran, M., Ritter, J. R., & Zhang, D. (2007). Do today's trades affect tomorrow's IPO allocations? *Journal of Financial Economics*, 84(1), 87–109.
- Pagano, M., & Panetta, F. (1998). Why do companies go public? An empirical analysis. *The Journal of Finance*, 53(1), 27–64.
- Park, H. D., & Patel, P. C. (2015). How Does Ambiguity Influence IPO Underpricing? The Role of the Signalling Environment. *Journal of Management Studies*.
- Reuter, J. (2006). Are IPO Allocations for Sale? Evidence from Mutual Funds. *The Journal of Finance*, 61(5), 2289–2324.
- Ritter, J. R., & Welch, I. (2002). A Review of IPO Activity, Pricing, and Allocations. *The Journal of Finance*, 57(4), 1795–1828.
- Ritter, J. R., & Zhang, D. (2007). Affiliated mutual funds and the allocation of initial public offerings. *Journal of Financial Economics*, 86(2), 337–368.
- Smith, R., & Craig, S. (2004). Auction promises to bid adieu to tradition. *Wall Street Journal*.
- Smith, R., Grimes, A., Zuckerman, G., & Scannell, K. (2002). Something Ventured and Something Gained? *Wall Street Journal*.
- Stoughton, N. M., Wong, K. P., & Zechner, J. (2001). IPOs and Product Quality. *The Journal of Business*, 74(3), 375–408.

About the Authors



DOUGLAS R. MILLER (millerdr@uncw.edu) is an Assistant Professor of Management at Virginia Commonwealth University. His research areas include firm innovation and new venture founder commitment. His work has been published in the *Journal of Product Innovation Management* and *Strategic Management Journal*. He earned a PhD from Washington State University.



TERA L. GALLOWAY (lgallo@ilstu.edu) is an Assistant Professor in Strategic Management at Illinois State University. Since earning her PhD from Washington State University, she has published in several outlets including *Entrepreneurship Theory & Practice* and presented at national and international conferences. Her research interests include alliances, advice networks, coopetition, and legitimacy repair.



DUSTIN B. SMITH (millerdr@uncw.edu) is an Assistant Professor of Management and Corporate Responsibility at Webster University. His work focuses on social issues in management including reputation repair and recovery, stakeholder reactions to social initiatives, and antecedents to corporate social performance. Dr. Smith received his PhD from Washington State University.