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Ronald J. Gilson

Columbia Law School, rgilson@law.columbia.edu

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UNDERSTANDING THE CHOICE BETWEEN PUBLIC AND PRIVATE EQUITY FINANCING OF EARLY STAGE COMPANIES: A COMMENT ON BARRY AND TURKI

by
Ronald J. Gilson*

This Comment considers the results of Barry and Turki's research data that indicates that investments perform differently depending on whether innovation is financed by private or public equity investment. The Comment posits two hypotheses for the differential performance. The first highlights ex ante differences between private and public subsamples, that is that the financing choice separates good prospects from bad. The second hypothesis focuses on ex post differences in performance that results from differences in governance structure and incentives created by the structure of public and private equity investment. The ex ante separation hypothesis and the ex post performance hypothesis are not necessarily mutually exclusive; the data presented by Barry and Turki are consistent with either or both hypothesis.

I. INTRODUCTION	123
II. THE EX ANTE SEPARATION HYPOTHESIS.....	126
III. EX POST PERFORMANCE DIFFERENCES	127
IV. WHY IS THIS AN EQUILIBRIUM?.....	130

I. INTRODUCTION

In the vocabulary of empiricists like Christopher Barry and Adel Turki, the papers presented at the Northwestern School of Law Forum on Financing Innovation and now collected in this volume of *The Journal of Small and Emerging Business Law*, divide into two distinct subsamples. One subsample is comprised of analytic papers that seek to explain phenomena whose characteristics are based largely on intuition and assump-

* Charles J. Meyers Professor of Law and Business, Stanford Law School, and Marc and Eva Stern Professor of Law and Business, Columbia University School of Law. I appreciate the comments of Christopher Barry and Adel Turki, and those of the participants at a conference on Financing Innovation, sponsored by the Northwestern School of Law of Lewis & Clark College.

tions about what the world is really like.¹ The second subsample is empirical; real evidence is presented of what the world is actually like.

Simple observation of the two subsamples demonstrates that the distribution of the forum papers among the two subsamples is not random. It is skewed toward the analytical and away from the empirical by a factor of some seven to one. Even with a sample this small, I expect the difference is statistically significant.

For my purpose, the significance of the difference, and the special contribution of Christopher Barry and Adel Turki's article *Initial Public Offerings by Development Stage Companies*,² lies in the complementarity between analytical and empirical research. In the end, those of us who adopt as our task explaining why institutions and patterns of economic activity take the form they do are dependent upon the empiricists to uncover the objects of our inquiry. The problems on which we focus become dramatically richer as empiricists increase our knowledge of what actually happens in the world. In turn, analysis made more sophisticated by empirical efforts gives rise to more interesting hypotheses for further empirical testing, and then further analytical refinement.

The Barry and Turki article illustrates this important interaction. Their article provides significant data concerning the returns to investors in development stage companies that fund their activities through initial public offerings (IPOs). We learn that returns on investments in two samples of development stage companies—one composed of biotech companies and one composed of development stage companies in other industries—dramatically underperform the market whether or not performance is adjusted for risk. This data give rise to a very interesting puzzle concerning the capital market's operation with respect to the subject of this forum: the choices available to early stage companies seeking to finance their innovations. In my comments, I want to flesh out this puzzle, and suggest how additional empirical work might further increase our understanding of the operation of this important market segment.

To see the puzzle, remember that an IPO is not the only financing source for early stage companies. Financing may also be obtained from venture capital limited partnerships that invest in a portfolio of early stage companies using funds provided by passive investors, typically institutions.³ These funds, which in 1996, for example, raised approximately \$6.5 billion in new investment, reportedly have earned very substantial

¹ The classic comment at this point is that the lawyer's definition of data is the plural of anecdote.

² Christopher B. Barry & L. Adel Turki, *Initial Public Offerings by Development Stage Companies*, 2 J. SMALL & EMERGING BUS. L. 101 (1998).

³ For example, in 1995 pension funds, banks and insurance companies, and endowments and foundations accounted for 78% of the venture capital funds raised in the United States. Bernard S. Black & Ronald J. Gilson, *Venture Capital and the Structure of Capital Markets: Banks versus Stock Markets*, 47 J. FIN. ECON. 243, at tbl.2 (1998).

returns, which presumably accounts for the growth of funds under their management.⁴ Comparing the returns on early stage investments by venture capital funds with Barry and Turki's data on the performance of development stage IPOs reveals a fascinating contrast.

- *Private equity* (venture capital) investments in early stage technology companies appear to perform quite favorably on a portfolio basis.
- *Public equity* (IPO) investments in early stage technology companies appear to perform quite poorly on a portfolio basis.

The puzzle is to explain the apparent empirical regularity: investment performance differs dramatically depending on whether innovation is financed by private or public equity investment.

Barry and Turki do not entirely ignore this issue. Early in their article they suggest that development stage companies seek public financing because commercializing a new technology may require hundreds of millions of dollars.⁵ Venture capitalists, Barry and Turki argue, could not make such large investments without unduly concentrating their investments. Thus, only the public equity market can fund development projects of this size.

A number of problems confront this analysis. First, the IPOs in the Barry and Turki sample simply are not large enough to create a portfolio concentration problem. The mean and median gross proceeds from their biotechnology sample IPOs were \$11.6 million and \$7.1 million, respectively, and the largest offering was \$99 million. The figures were somewhat smaller for the non-biotechnology sample. The mean and median gross proceeds of this sample were \$9.8 million and \$5.1 million, respectively, and the largest offering was \$52 million.⁶ Given the practice of syndicating venture capital investments among a number of participants,⁷ and the staging of early venture capital investments—that is, the funding of only a portion of the capital the business plan discloses as necessary to complete the project, with decisions about subsequent funding delayed until specified milestones are met⁸—the size of IPOs in each sample seem well within the funding capacity of the private equity market.

⁴ *Id.*

⁵ Barry & Turki, *supra* note 2, at 102.

⁶ Barry & Turki, *supra* note 2, at tbl.1.

⁷ Joshua Lerner, *The Syndication of Venture Capital Investments*, 23 FIN. MGMT. 16 (1994).

⁸ Paul A. Gompers, *Optimal Investment, Monitoring, and the Staging of Venture Capital*, 50 J. FIN. 1461 (1995). Because staging operates as a means to reduce risk by increasing the opportunity for and intensity of monitoring, the data show that the earlier in the development process the first venture capital investment occurs, the greater the total number of rounds of financing.

Second, even if the amount of capital sought determined whether recourse is to the private or public equity markets, the difference in returns that underlies the puzzle remains. Why should investments in large development projects systematically outperform investments in smaller development projects?

I will offer here two alternative hypotheses for the differential performance of private and public equity investments in development stage companies. The first focuses on potential *ex ante* differences between the private and public subsamples. The idea is that the choice of financing serves to separate good prospects from bad prospects. The second hypothesis focuses on potential *ex post* differences in performance that result from differences in the governance structure and corresponding incentives created by the structure of public and private equity investments. In this analysis, the difference in performance results from the financing decision. Both hypotheses pose another and more difficult puzzle: How can the performance differential between private and public investments in development stage companies represent an equilibrium? Why would any one buy the shares offered in the initial public offering of a development stage company? Analysis of this second level puzzle moves the ball back into Barry and Turki's empirical domain, to see if further inquiry can begin to sort things out.⁹

II. THE *EX ANTE* SEPARATION HYPOTHESIS

Imagine that we have a population of development stage companies composed of good and bad prospects. The *ex ante* separation hypothesis posits that venture capitalists are better at choosing the good prospects from the mixed pool of investment candidates, thereby relegating the bad prospects to the public equity market. The logic underlying the hypothesis seems at least plausible. The general partners of venture capitalist limited partnerships are specialists in selecting from among thousands of proffered business plans the few that have the highest potential to succeed. In contrast, underwriters of IPOs are less specialized and presumably less effective at differentiating among early-stage high technology companies. To be sure, we do observe underwriters, like Hambrecht & Quist and Montgomery Securities, who specialize in high technology and biotechnology underwriting and are presumably quite skillful in selecting high quality clients. However, the skills of high-quality, specialized underwriters do not seem to figure prominently in the performance of Barry and Turki's samples of IPOs. Their samples,

⁹ I should note that Barry and Turki have already begun this task. See Christopher B. Barry & L. Adel Turki, Development Stage IPOs as a Vehicle for Financing Innovation, paper presented at the Columbia Law School/Sloan Foundation Conference on Financing Innovation (Dec. 12, 1997).

especially the non-biotechnology sample, are characterized by low quality underwriters.¹⁰

The hypothesized difference in evaluative expertise between general partners of venture capital funds and the underwriters of development stage IPOs is reinforced by the differing incentives of venture capital general partners and development stage underwriters. The structure of venture capital limited partnerships aligns the incentives of the general partners who select the investments and the limited partners who provide the funds. The bulk of the general partner's compensation depends on the performance of the partnerships' investments; the general partner receives a percentage of the proceeds when an investment is made liquid and the proceeds distributed to the limited partners.¹¹ In contrast, underwriters of firm commitment IPOs earn a fixed fee payable on the closing of the offering. The underwriter has no direct stake in the issuer's future performance.¹²

One further step completes the structure of the separation hypothesis. Skill differentials can explain why venture capitalists can identify the good prospects. But we still have to explain why the good prospects prefer private equity investments. What do venture capitalists provide that the public equity markets do not?

In the private equity market, the venture capitalist makes important non-capital contributions in addition to capital contributions. The venture capitalist also provides management consulting-like services, monitoring services, and services as a reputational intermediary.¹³ These non-capital contributions increase the probability of the development project's success and, hence, increase the project's expected value. Since the returns to both the venture capitalist and the entrepreneur depend on the project's success, the venture capitalist's promise to provide valuable services as well as capital is both attractive to the entrepreneur and credible.

III. EX POST PERFORMANCE DIFFERENCES

The second hypothesis is that the different post-transaction governance structures of venture capital-backed and IPO-backed—private equity-backed and public equity-backed—firms influence subsequent firm

¹⁰ Barry & Turki, *supra* note 2, at tbl.1.

¹¹ Paul Gompers & Josh Lerner, *The Use of Covenants: An Empirical Analysis of Venture Partnerships Agreements*, 39 J. L. & ECON. 463 (1996); William A. Sahlman, *The Structure and Governance of Venture Capital Organization*, 27 J. FIN. ECON. 473 (1990).

¹² The underwriter may have some indirect stake in the post-performance performance of the companies that they take public because of the operation of a reputation market. See James R. Booth & Richard L. Smith, *Capital Raising, Underwriting and the Certification Hypothesis*, 15 J. FIN. ECON. 261 (1986); Ronald J. Gilson & Reinier Kraakman, *The Mechanisms of Market Efficiency*, 70 VA. L. REV. 549 (1984).

¹³ See, e.g., Black & Gilson, *supra* note 3; Michael Gorman & William A. Sahlman, *What Do Venture Capitalists Do?*, 4 J. BUS. VENTURING 231 (1989).

performance. Under this hypothesis, venture capital investments have higher returns than investments in development stage IPOs because venture capital-backed companies have more effective governance structures.

Investing in development stage companies presents three critical contracting problems. First, precisely because the company is at an early stage, great uncertainty exists concerning future performance; most of the important decisions bearing on the company's success remain to be made, and most of the significant uncertainties concerning the outcome of the company's efforts remain unresolved. Second, the same factors make for enormous information asymmetries between potential investors and entrepreneurs, as intentions and ability are far less observable than actions already taken. Finally, the breadth of future managerial decisions creates potentially very large agency costs.¹⁴

The post-investment governance structure of venture capital-backed companies is carefully structured to address these problems. Venture capital investments are typically staged, with funding decisions keyed to the milestones set out in the business plan. Because the venture capitalist has the right, but not the obligation, to fund subsequent stages of development, the structure gives the investor a valuable option to abandon. In turn, the existence of the option to abandon both gives the entrepreneur a powerful incentive to perform and, by the entrepreneur's acceptance of the intensity of the incentive, reduces the information asymmetry concerning the company's future performance and the entrepreneur's type.¹⁵

Additionally, the structure of the venture capitalist's investments carries with it control rights disproportionate to the investor's equity. The venture capitalist receives at least significant board representation and often board control, usually has the effective power to replace a portfolio company's chief executive officer, and receives extensive approval rights over important operating decisions through covenants in the investors rights agreement.¹⁶ During the period of their operation, these disproportionate control mechanisms give the venture capitalist powerful monitoring tools. And because disproportionate control terminates on a firm commitment public offering above a specified price, the arrangement gives the entrepreneur an important incentive. In effect, the entrepreneur receives a call option on the disproportionate control given the venture capitalist exercisable on the company's success (as measured by an investment banker's willingness to underwrite an initial public offering).¹⁷

¹⁴ Paul A. Gompers, *An Examination of Convertible Securities in Venture Capital Investments* (Nov. 1997) (unpublished manuscript, on file with author).

¹⁵ Gompers, *supra* note 8.

¹⁶ Black & Gilson, *supra* note 3; Gompers, *supra* note 14.

¹⁷ Black & Gilson, *supra* note 3.

Another element of the post-transaction governance structure acts directly on the entrepreneur's equity holding. The entrepreneur is typically required to accept a staged vesting requirement on some of all of their stock.¹⁸ Coupled with the venture capitalist's disproportionate control, vesting creates a powerful performance incentive. Because of the venture capitalist's monitoring capacity, the strength of the incentive is consistent with Paul Milgrom and John Roberts' incentive intensity principle which counsels that high intensity incentives should be accompanied by a significant investment in monitoring to avoid incentive induced agency costs.¹⁹

Now compare the post-transaction governance structure following a development stage IPO. The governance structure not only does not operate to mitigate problems of uncertainty, information asymmetry and agency costs, it exacerbates them. The sale of shares to dispersed investors creates the standard Berle-Means problem with no mechanism to respond to it.²⁰ In contrast to the venture capitalist's active involvement with a portfolio company, and the techniques to align the investors' and entrepreneurs' incentives, the underwriter has no post-transaction role in the issuer's operation. Indeed, it is difficult to imagine a worse governance structure to respond to the contracting problems posed by investing in a development stage company.

The *ex post* performance difference hypothesis follows from the differences in governance structures between venture capital portfolio companies and development stage IPO issuers. Governance influenced performance and the good governance structures associated with venture capital investments improve the post-transaction performance of portfolio companies.

The *ex ante* separation hypothesis and the *ex post* performance hypothesis are not necessarily alternatives. The difference in portfolio quality between companies accessing the private and public equity markets that result from the venture capitalist's skill at selecting the best prospects may be widened by the assistance provided by the venture capitalist after the investment. The data presented by Barry and Turki are consistent with either or both hypotheses.²¹

¹⁸ Michael J. Halloran et al., *Making Portfolio Company Investments*, in VENTURE CAPITAL AND PUBLIC OFFERING NEGOTIATION (Lee F. Benton et al. section eds., 1998).

¹⁹ PAUL MILGROM & JOHN ROBERTS, ECONOMICS, ORGANIZATION & MANAGEMENT, ch. 7 (1992).

²⁰ Although Barry & Turki do not provide data on the distribution of share ownership following a development stage IPO, there is reason to think that institutional ownership—a potential counter to the Berle-Means problem, is low. See discussion *infra* p. 128.

²¹ Alon Brav & Paul A. Gompers, *Myth or Reality? The Long Run Underperformance of Initial Public Offering: Evidence from Venture and Non-Venture Backed Companies*, 52 J. FIN. 1791 (1997), report data that are also consistent with both the *ex ante* separation hypothesis and the *ex post* performance hypothesis. They report that the long run

IV. WHY IS THIS AN EQUILIBRIUM?

Taken separately or together, the *ex ante* selection and *ex post* performance hypotheses pose the same puzzle. If venture capitalists end up with the good investments (whether because of expertise in selection or governance) through the private equity market, and the public ends up with bad investments through the public equity market, why do public investors continue to participate in development stage IPOs? How can the Barry and Turki data represent an equilibrium?

I can think of two other circumstances where scholars have sought to understand an equilibrium in which market participants continued making systematically unfavorable investments. The first involves the poor returns to investments in certain high-yield debt securities. Steven Kaplan and Jeremy Stein analyzed the persistent poor returns to purchasers of subordinated debt issued to finance acquisition in the second half of the 1980s.²² They concluded that the most likely explanation for such systematically poor performance by investment professionals was agency costs by the officers of savings and loan and insurance companies which were the primary purchasers of the securities—persistent poor performance was apparently a function of disloyalty, not irrationality.

The second circumstance involves the persistence of closed-end mutual fund discounts—that is, the persistence of such funds trading at prices below the net asset value of their portfolio securities—and the successful initial public offering of such funds despite a reasonable expectation that an investor in the fund IPO will suffer an immediate drop in the value of the stock purchased. Lee, Shleifer and Thaler attribute the discount to noise trading risk, the risk that the price of the closed end fund security will not reflect its fundamental value because irrational investors will continue to trade at a price that does not reflect the available public information.²³ The discount represents the return for bearing noise trading risk. In their analysis, individual investors are a proxy for “stupid” noise traders, and the discount persists because closed end mutual funds are purchased overwhelmingly by individual investors, not institutions. Here the problem is investor irrationality.

Taken together, the LBO debt and closed-end fund examples suggest a hypothesis concerning the persistent underperformance of development stage IPOs that involves both disloyalty and irrationality. The

underperformance of IPOs is largely eliminated with companies backed by experienced venture capital investors. They also find that the underperformance phenomenon is strongly related to size, which suggests that the venture backed offerings are not of development stage companies, reinforcing the characterization that venture capital and IPOs are substitutes in the financing of development stage companies.

²² Steven Kaplan & Jeremy Stein, *The Evolution of Buyout Pricing and Financial Structure (or What Went Wrong in the 1980s)*, 108 Q. J. ECON. 313 (1993).

²³ Charles Lee et al., *Investor Sentiment and the Closed-End Fund Puzzle*, 46 J. FIN. 75 (1991).

hypothesis is that noise traders can be *sold* poor investments by overreaching underwriters—the disloyalty component. The fact that the underwriters in the Barry and Turki sample were generally of low quality provides support for this hypothesis.

Some light can be shed on this explanation for the persistence of so peculiar an equilibrium by looking at who owns the shares issued in development stage IPOs a few days after the offering.²⁴ Should the long-term underperformance of development stage IPOs be suffered largely by individual investors—the noise trading/irrationality component—then interesting questions arise concerning both existing disclosure and suitability standards under the federal securities laws.

In all events, the analysis of the equilibrium puzzle concerning the long-term underperformance of development stage IPOs brings me back to the subject which I began this comment on Barry and Turki's interesting article: the useful interaction between empirical and analytic scholarship. I expect the authors' continuing empirical examination of their samples will shed some further light on this fascinating problem.

²⁴ The lag would take into account the potential flipping of shares by institutional investors.