That Thing Venture Capitalists Do

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One key to economic prosperity is the ease with which promising new goods and technologies are identified, developed, and brought to the attention of the consumers and firms that use them. But there is no single blueprint or framework for guiding an idea from its beginning as a lightbulb over an inventor's head to its ultimate destination—the assembly line, drugstore, or desktop. One such framework, the *venture capital* industry, is a unique contribution of the U.S. financial system, although one that is increasingly being copied around the world. The central role of venture capital in some of the best known success stories of recent years—Microsoft, Genentech, and Federal Express, to name just a few—has put the industry in the headlines.

Although just about everyone knows the term venture capital, not many people know precisely what venture capitalists do: How do they identify entrepreneurs with promising new ideas? What kinds of services do they provide to these entrepreneurs? What role do they play in helping entrepreneurs secure funds?

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How successful has the venture capital industry actually been? It's only in the last few years that financial economists have begun to carefully describe and analyze the distinctive features of the venture capital market and provide systematic answers to questions like these.[1]

An understanding of the venture capital industry is important to policymakers in the United States and abroad. Some policymakers in the United States believe that the government can adapt the institutions of the venture capital industry to increase small firms' access to external finance. And outside the United States, policymakers debate ways to nurture the growth of domestic venture capital industries, while businessmen are already busily starting venture capital firms. Such public policies are more likely to succeed if their designers understand what makes the venture capital industry tick.[2]

WHO NEEDS A VENTURE CAPITALIST?

Why Al Needs a Venture Capitalist. Consider Al B. Gates—an industrial biologist, turned entrepreneur—who was recently reincarnated as the startup firm Alpha Biotronics. Alpha holds the patent on a smart bacterium that was conceived in Al's basement lab. Until now, Alpha has covered its costs using a patchwork of financing sources, most recently an $80,000 equity investment by a retired local businessman, who made his own small fortune in biologics and who was introduced to Al by a mutual friend in the biological community. This businessman—an *angel* in market lingo—has not only provided funds but has also given Al useful advice about developing a coherent business plan.[3]

However, angels seldom invest more than $100,000, and the firm now needs a lot more than that. Also, Alpha's management team lacks the marketing and financial experience to complement Al's technical and industry expertise, but the businessman simply hasn't the time or contacts to help Alpha recruit professionals with the appropriate skills. Alpha's angel has played a central role in moving the firm to the next stage, but further financing must come from elsewhere.

Alpha investigated the possibility of a long-term bank loan, but it became immediately clear that banks simply won't lend to startup firms in untested markets, especially firms without tangible assets to post as collateral.[4] And even under the most optimistic business plan, Alpha doesn't forecast revenues high enough to make interest payments any time soon. What Al needs is a venture capitalist, but he's not the only one.

Why Calipers Needs a Venture Capitalist. Calipers is one of the largest employee pension funds in the United States. For a number of reasons, Calipers is the type of investor that might

[1]This article focuses on the recent empirical literature. Christopher Barry's article contains a review of much of the recent academic literature on venture capital, including important theoretical contributions that I don't discuss. Paul Gompers' 1994 essay presents a fascinating history of the venture capital industry.

[2]See Josh Lerner's 1996 analysis of the Small Business Innovation Research program for an example of one government program that has tried to provide venture capital to small, high-technology firms. Also, see Paul Gompers' 1994 article and the Staff Study by George Fenn, Nellie Liang and Stephen Prowse for discussions of the changing fortunes of small business investment corporations (SBICs), which were established by the Small Business Investment Act of 1958 to provide risk capital to small businesses.

[3]Although there are no reliable data, analysts estimate that annual investment in the angel market is roughly $20 billion, about five times as large as the yearly investment in the venture capital market over the last 15 years. Many firms that receive venture capital funding have previously received angel financing. See William Wetzel's article for a description of the angel market.

[4]Banks do provide venture capital financing through specialized SBIC subsidiaries.

find venture capital investments particularly attractive. The returns on its portfolio are used to pay retirement benefits for the plan's beneficiaries, so its liabilities—the promised payments to beneficiaries—are long term. Thus, Calipers can be a patient investor. Calipers is also very large and well diversified; the pension fund can afford to have some investments that don't pan out at all in exchange for the possibility of some real winners.

If Alpha seems like an ideal investment for Calipers, why doesn't the pension fund make the investment directly, instead of through a venture capitalist (whose services do not come cheaply)? The main reason is that a large diversified pension fund can't develop specific expertise on a wide range of industries, especially those that exist primarily in entrepreneurs' imaginations. Deciding whether Alpha's smart bacterium has real commercial applications and then working closely with novice managers like Al to bring his bacterium to market would demand a level of focused attention on single investments that Calipers' portfolio managers can't provide. To get in at the ground floor of the coming nanotechnology revolution, Calipers needs a venture capitalist.

VENTURE CAPITALISTS AND OTHER INTERMEDIARIES

How Does a Venture Capital Firm Work?[5] The typical venture capitalist is a member of a small, independent partnership with a professional staff of between six and 12 people, including a few general partners and a small number of associates who are venture capitalists in training. Venture capital firms are small: In 1996 the typical partnership managed between $50 and $99 million in assets, and nearly three-quarters of all venture capital firms managed between $25 million and $250 million in assets. In comparison, in 1996 the average U.S. commercial bank had a portfolio of more than $481 million and the 100th largest bank had more than $7 billion in assets.

Consider Splice and Dysem Associates (S&D), a 10-year-old venture capital firm with four general partners managing total assets of $80 million. The firm's particular investment focus is biologics—especially the interface between microorganisms and microprocessors—and most of S&D's investments are in early-stage firms. Splice and Dysem first met as MBA students at Stanford after Dysem had given up an unsatisfying academic career in biology and Splice had gained experience (and lost his shirt) as owner of a failed software startup firm. Like most other venture capital firms—including ones with less specialized portfolios—S&D invests almost exclusively in firms located not too far from the partners' homes in the San Francisco area.

S&D currently has two separate venture capital funds running. (See *The Venture Capital Fund.*) The first fund is now seven years old, and its 25 *portfolio firms*—those firms in which the venture capital fund invests—are now generating returns for investors. Some firms have been sold to larger companies, and one portfolio firm went public with an initial public offering (IPO) in the hot market of 1993. Nearly two years ago, S&D started a second fund, following a pattern typical of the industry: Venture capitalists plan to start a new fund approximately five years into the life of their previous fund. No new firms are added to the portfolio of the earlier fund beyond this point, while the venture capital firm harvests the returns on its previous investments. At the end of 10 years, the first fund will be wound up, and all of its remaining cash and securities will be divided up among the fund's investors (including S&D).

[5]Much of the information in this section about the typical activities of the venture capital fund is drawn from the pioneering work by William Sahlman. Some of the more recent numbers are drawn from the study by Fenn, Liang, and Prowse, which contains a description of the broader private equity market.

The Venture Capital Fund[a]

Organization of the Fund. The typical venture capital fund is organized as a limited partnership, in which the venture capitalist—the *general partner*—invests 1 percent of the funds and the other investors—the *limited partners*—invest the remainder.[b] Investors make an initial investment and also a commitment to provide funds up to some maximum dollar amount during the life of the fund. Limited partnerships have a fixed maturity, usually 10 years for venture capital funds, with an option to extend the life of the fund up to three years. At the end of the fund's life, all cash and securities on hand are distributed to the fund's investors.

Management of the Fund. As general partner, the venture capitalist plays an active role in managing the portfolio, but the fund's limited partners are not permitted to play an active management role. However, the fund's investors do have limited voting rights concerning some decisions, for example, whether the fund's life should be extended at maturity. Investors also exercise some control through covenants, contractually agreed rules that place restrictions on the investment decisions of the venture capitalist.[c] For example, one common covenant limits personal investments by fund managers in portfolio firms.

Compensation Scheme. The venture capitalist's compensation has both a fixed and a variable component.[d] The fixed component is a management fee, usually 2 to 3 percent of the funds already invested. The variable component is approximately 20 percent of the fund's profits—often called the *carried interest*—which is commonly paid to the venture capitalist only after investors have recovered their investment. (However, this strict priority scheme is not universal.) The remaining 80 percent of the fund's profits go to the investors.

[a]Sahlman's article contains an illuminating discussion of the structure of the venture capital fund.

[b]In the 1980s the limited partnership replaced the closed-end mutual fund as the primary organizational form for the venture capital fund. In this article, I do not examine the interesting question: Why has the limited partnership become the dominant organizational form for venture capital investments? Tax considerations are probably not the main explanation, unlike limited partnerships in oil and gas exploration and in real estate. See Fenn, Liang, and Prowse's study for a discussion of the growth of the limited partnership in the venture capital industry.

[c]See Gompers and Lerner's 1996 article for a detailed analysis of the functions of different covenants and how the types of covenants have changed over time.

[d]Gompers and Lerner's 1995 working paper contains a careful empirical investigation of compensation schemes.

When Splice and Dysem started their firm, they had a Rolodex full of contacts but no track record, and it took them nearly two years to line up financial commitments from investors for their first fund. But with investors in their initial fund now happily receiving returns on their investment—and especially with the well-publicized IPO by one of their portfolio firms—S&D has found it much easier to line up commitments for its second fund. In fact, the second fund was fully subscribed within four months, a possibility only for firms with good track records.

Roughly two-thirds of the financing for the funds comes from institutional investors such as pension funds, insurance companies, and university endowments (Figure). This pattern has been typical of the industry since 1979, when pension funds began investing in venture capital funds after the Labor Department

liberalized its interpretation of the "prudent man" rule under ERISA (the Employee Retirement Income Security Act).[6] Indeed, this ruling not only changed the composition of investors in the venture capital industry but also increased the total flow of funds into the industry.[7]

Venture Capitalists Are Like Other Intermediaries in Some Ways . . . In addition to lining up funds, each partner at S&D spends a large block of time *screening* potential investments, much like a bank loan officer evaluating a loan application. However, the rejection rate is very high. A single partner will receive 100 proposals per year, but most will be dismissed after a cursory look. Perhaps 10 of the initial 100 proposals will reach the stage where two of the firm's partners examine the deal in detail, and of these 10, the assembled partners will agree to fund only one or two.

One way that venture capitalists think about potential investments is to ask what rate of return the investment will yield. Like many other venture capitalists specializing in early stage firms, S&D's partners insist that any firm they fund have an annual rate of return of at least 60 percent, assuming that the investment succeeds.[8] To get a feeling for how high this cutoff return is, note that the average annual return on the S&P 500 since 1945 has been 8.33 percent. A lower return simply wouldn't justify the time spent by a venture capitalist in overseeing the firm, especially given the substantial likelihood of losses. [9]

Also, like commercial bankers or investment bankers, venture capitalists act as *consultants* for their portfolio firms. But the consulting side of the venture capitalist's relationship with its portfolio firms is more important than it is for other types of intermediaries, since the startup firm's management is often inexperienced. Over the years, S&D's partners have built up many contacts in the local business community, and they can recommend a trustworthy accountant or put the entrepreneur in touch with a reliable supplier of lab equipment.

...But Venture Capitalists Play a More Active Governance Role Than Other Intermediaries. In the United States, commercial bank-

[6]Under this rule, pension funds are limited to investments that would be undertaken by a prudent investor on his own behalf.

[7]Before 1978, new commitments to venture capital funds had never exceeded $0.5 billion (in 1993 dollars). In 1979, new commitments exceeded $1 billion for the first time and averaged over $4 billion in new commitments per year throughout the 1980s. (See Gompers 1994.)

[8]The investment horizon for determining the rate of return is the time until the firm is taken public or sold. The cutoff return will be lower for later-stage venture capital investments, since they are less risky.

[9]Sahlman's article provides historical evidence that more than a third of venture capital investments incur a loss and nearly 12 percent involve a *total* loss of funds.

FIGURE
The Sources of Venture Capital

	1978	1995	1996
Banks / Insurance	16 %	5 %	18 %
Foundations / Endowments	9	20	22
Pension Funds	15	40	38
Corporations	10	18	2
Families / Individuals	32	8	17
Other	18	6	3

Source: *Venture Capital Journal,* Venture Economics.

ers and investment bankers seldom play an active role in making strategic decisions for firms, nor do they play a significant role in choosing or dismissing management. However, *active governance* is a specialty of the venture capitalist. Now that S&D's partners have agreed to invest in Alpha—after weeks of intense negotiations over contract terms—Al knows that Dysem, the partner assigned to watch closely over Alpha's affairs, will not be a passive investor.

At the partners' meeting where Dysem first presented the Alpha deal, the expected rate of return and other financial projections were *not* the main objects of discussion. As one real-world venture capitalist says: "If you can't do the math in your head, it's probably not a venture deal."[10] For S&D to finance a firm, one of the partners must have the time and commitment to sit on the firm's board of directors, although the partner won't necessarily play such an active role unless the firm experiences significant problems, especially those requiring a change in the firm's management.[11] In any case, Dysem expects to visit Alpha about 20 times during the year and to spend 110 hours in direct contact with Alpha's managers, either over the phone or face-to-face. And since she already oversees eight other portfolio firms and sits on the board of directors of five, this is not a trivial commitment. Like the other partners in the firm, she will take on oversight of two new firms each year, but no more.

These extensive oversight activities (and the high probability of losses) are the reasons that only firms with extraordinary prospects can be considered. The need for close contact with the portfolio firm and time spent traveling to board meetings also explain why S&D acts as lead investor only for firms within a reasonable commute of the San Francisco area.[12]

THE VENTURE CAPITALIST HAS MANY LEVERS OF CONTROL

The Staging of Finance. The venture capitalist doesn't make her investment all at once. Instead, funds are always provided in stages, and the entrepreneur receives only enough funding to reach the next stage.[13]

In part, the staging of finance reflects the venture capitalist's view of a firm's development as a series of milestones, in which risks are reduced one by one.[14] For example, *seed financing* allows the entrepreneur to produce a prototype of a new good. During this stage, the entrepreneur proves that the design is feasible, but has yet to establish whether it is marketable, much less profitable. Each stage has well-defined performance objectives, and more funds are provided if performance objectives are met.

If performance objectives are *not* met, the venture capitalist must make a decision. Should the portfolio firm's strategy be reconsidered? Should the firm's management team be changed? And in the worst case, should funding be cut off completely? Even if the venture capitalist decides to provide more funds, the entrepreneur will pay a price. The venture capi-

[10]This quote is in Michael Peltz' article on the venture capital firm Kleiner Perkins Caulfield & Byers.

[11]See Lerner's 1995 article for an analysis of venture capitalists' oversight activities on boards of directors.

[12]When a promising investment outside the venture capitalist's geographical area turns up, it may be passed on to another venture capital firm, which becomes the lead investor—the firm with primary oversight responsibilities. The firm that first identified the investment may then become part of a syndicate, in which different firms share the role of venture capitalist. See Lerner's 1994(a) article for a discussion of syndication practices.

[13]Gompers' 1995 article has an extensive analysis of the staging of finance.

[14]The definition of particular stages is not uniform. Sahlman presents one description of the stages of venture capital investing.

talist inevitably demands a larger share of the firm's stock in return for additional funding to meet some objective.[15] This fall in the entrepreneur's ownership share of the firm diminishes his influence and reduces his future expected returns.

The severity of the penalties for not meeting objectives, which range from a reduced ownership share to being replaced altogether, provides the entrepreneur with powerful incentives to work exceptionally hard and also gives the venture capitalist lots of power to influence the firm's direction.

The Venture Capitalist Holds Convertible Securities. The securities that the venture capitalist receives in exchange for investing funds in the portfolio firm are more complicated than simple debt or equity contracts. While the securities are relatively complicated, the main idea behind their design is straightforward. Some of the contractual features increase the venture capitalist's influence, while others push the venture capitalist to use this influence in ways that increase the firm's value.

The venture capitalist usually receives *convertible preferred* stock. Like a debt contract, *preferred* stock requires the firm to make fixed payments to the stock's holder.[16] And the promised payments must be made before any common stockholder gets dividend payments, that is, the preferred stockholder has priority over common stockholders. Hence, the venture capitalist can make sure that the entrepreneur is not paying himself a high salary disguised as dividends. It also means that if things turn out badly and the firm is liquidated, the venture capitalist gets back her investment in the firm before the entrepreneur gets paid anything.

Unlike preferred stockholders in many other settings, the venture capitalist usually has voting rights. In addition, the venture capitalist usually has a right of redemption, which means that she can cash out her shares at some predetermined price whenever she wants. Along with the fixed payments, both of these features give the venture capitalist multiple levers of control—as well as a way to make a quick exit if prospects look bad.

With so many features that increase the venture capitalist's influence, a well-designed contract should also have features leading her to use this influence in sensible ways. This is where the *convertibility* feature comes in.[17] The right to convert her financial claims into shares of common stock focuses the venture capitalist's attention on the firm's market value. Since the firm's common stock will be valuable only if the firm does well, the venture capitalist's vision is fixed on maximizing the value of the firm's stock and ensuring that the firm succeeds. In particular, any incentive to cut her

[15]Both the objectives and the consequences of failing to achieve them may be written down in the funding contract, in what are termed "milestone" or "benchmark" deals. This is common in high-tech, early-stage financings. In other deals, there is an implicit understanding between the firm and the venture capitalist about the objectives that must be met to move to a subsequent stage. When contracts are implicit, reputational concerns limit the venture capitalist's ability to increase her ownership share by threatening to withhold funds.

[16]In many ways, preferred stock is more like debt than equity, and it is priced accordingly in the marketplace. In addition to contractually fixed payments, preferred stock has a fixed liquidation value per share, quite similar to a bond's face value. However, unlike interest payments on debt, dividend payments to preferred stockholders are made at the firm's discretion, and they can be deferred by the firm's board of directors without creating a legal default. Since venture-financed firms are seldom making current profits, the promised dividends usually accrue until they can be paid at a later date.

[17]There is substantial variation in the details of funding arrangements between venture capitalists and portfolio firms, but the venture capitalist's right to convert her security into voting common stock appears to be more or less universal. Sahlman's article contains an extensive analysis of standard funding arrangements.

losses and run too quickly is reduced.

A strict focus on the value of the firm's stock also goes a long way toward creating a harmony of interest between the entrepreneur and the venture capitalist. Both the entrepreneur and the venture capitalist have a strong interest in seeing the value of the firm's stock go as high as possible, since this increases the wealth of both.

But perfect harmony is impossible. Although Alpha Biotronics' founder may be a brilliant nanobiologist, there is no guarantee that Al can manage a commercial firm or fix his gaze on the *commercialization* of smart bacteria. Al's earliest vision was that smart bacteria would build structures on distant planets (and win him a Nobel prize). But this conflicts with Dysem's more commercial view that smart bacteria will build condos at even lower cost than prefab. And Al's tenacity in the face of repeated failure—a necessary trait for a successful inventor—turns out to be plain stubbornness when Dysem insists that Al give up control to a professional manager. In a less noble vein, Al also likes the perks of being the boss of his own firm.

So why is Al willing to give up so much control to S&D? While we may sympathize with Al's dream of becoming the next Bill Gates, the venture capitalist's substantial power to overrule the entrepreneur makes economic sense: Investors will be reluctant to place their money in such high-risk investments unless contractual mechanisms reduce risks as quickly and completely as possible. Al knowingly left himself open to the risk of losing control over his own firm as a condition of getting funding in the first place.[18]

For a new product, we tend to think that the biggest risks are technological, for example, that it might not work as planned ("can we split the atom?").[19] But managerial incompetence or the inability to identify the most valuable commercial use of the product is more likely to derail a start-up firm than technological bugs ("will the dogs eat the dog food, or the fish jump out of the tank?"). In a 1989 survey by Gorman and Sahlman, venture capitalists identified management failure as the *most* important reason their own past investments came to naught. Venture capitalists see themselves as overcoming risks, especially the risks of poor management and mistaken market strategies.

TAKING FIRMS PUBLIC IS THE VENTURE CAPITALIST'S MAIN GOAL

Foremost in most venture capitalists' minds is an *exit strategy*. The venture capitalist expects to have an intense involvement with each portfolio firm for three to five years, at which time the successful firm is merged with or acquired by another firm or goes public in an IPO.[20] In the venture capital market, the portfolio firm that goes public generates nearly all of the returns.[21] It is also the "home run" that establishes a venture capitalist's reputation. Venture capitalists who have previously taken firms public find it easier to secure commitments from investors and organize new funds. And in the aggregate there is a clear relationship between newly committed funds and IPO activity: When the IPO market is hot, new funds flow into the venture capital industry.[22]

[18]It is important to note that not every entrepreneur wishes to retain a permanent controlling position in the firm. The option to move on to the next project or retirement may be attractive to many entrepreneurs.

[19]This and the following quote are from John Doer of Kleiner Perkins Caulfield & Byers. They are reported in John Heileman's entertaining article.

[20]Sahlman reports an average maturity for venture capital investments of just under five years.

[21]In one study cited by Sahlman, Venture Economics reported that IPOs yielded a return of 60 percent over four years while acquisitions yielded only 15 percent and liquidations lost 80 percent of their value.

[22]See Gompers 1994.

The central role of public equity markets in the venture capital process is one of its most distinctive features. Multiple pressures push the venture capitalist to bring the portfolio firm public as soon as possible, yet these pressures serve valuable functions.

Investors Need an Objective Measure of the Venture Capitalist's Performance. Investors find it very difficult to evaluate the venture-backed firm's performance, and, in turn, they find it hard to evaluate how well the venture capitalist is doing with their funds. The venture-backed firm usually has few tangible assets and is invariably suffering operating losses, so standard balance-sheet measures of performance—such as the rate of return on assets—are not very useful. The firm may be the only one of its type around, or it may be one of many firms vying to be the first to come to market with a product that has yet to be produced profitably. So, searching for similar firms as a basis for comparison is useless. For accounting purposes, the firms in the venture fund's portfolio are simply carried at their book value—which means they are valued at the amount of funds invested—until the firm moves on to the next stage, is sold to another firm, or goes public.

Even if investors had some way to determine the true value of the firms in the fund's portfolio when they commit their money—and the commitment is usually for 10 years—the venture capitalist will continue to add firms for five years.[23] So the portfolio keeps changing. While venture capital funds typically have covenants that restrict the venture capitalist's investment choices, no tablet of rules can foresee or solve all problems.

It is not hard to imagine the worries of an investor whose funds are tied up for 10 years and who has no way to judge or control the fund manager's performance. Since management fees are calculated as a percentage of the fund's assets, how can the investor be sure that the venture capitalist is not maximizing fund *size*, rather than fund *value*? And since the venture capitalist usually must pay investors back before receiving any profits—and has made only a tiny share of the initial investment—how can the investor be sure that the venture capitalist is not taking big risks on firms with poor prospects, hoping for positive returns through dumb luck?

What the fund's investors need is an *objective* way to evaluate the performance of the fund. This is what market participants do when a portfolio firm is taken public. At this time, market participants judge the venture capitalist's performance by how much they are willing to pay for the portfolio firm's stock. And since the venture capitalist's compensation is tied to asset values—both through the management fee and through the profit-sharing scheme—investors have an objective measure for dividing up portfolio returns.

Bringing Firms to Market Allows the Venture Capitalist to Shift Effort to New Firms. The successful venture capitalist's unique mix of skills includes securing financing, evaluating ideas and managers, and building successful management teams. Once risks have been reduced sufficiently, especially with a functioning management team in place, it would be wasteful for the venture capitalist to commit so much time and so many resources to the firm.

Once a firm has gone public or been sold, it no longer depends on the venture capitalist for funds, and the venture capitalist's responsibilities for governance are substantially reduced. And since starting a new fund roughly five years into the life of the preceding fund is the general rule-of-thumb, the venture capitalist can now shift attention back to the task of building firms.

[23]Funding commitments by investors are not irrevocable, but the penalties for refusing to honor the commitments are substantial. Furthermore, money already invested can't be withdrawn, and the legal rules governing limited partnerships severely limit investors' ability to sell their shares in the fund.

DOES THE FOCUS ON TAKING FIRMS PUBLIC PROMOTE A SHORT TIME HORIZON?

Some academic specialists and venture capitalists believe that the powerful pressure to quickly bring firms to market promotes excessively short time horizons. Moreover, they argue that these pressures have increased as institutions such as pension funds have gained importance as investors in venture capital funds. Even though institutions would appear to be naturally patient investors, market pressures can force institutional money managers to focus on immediate payoffs.[24] These pressures on institutional money managers are then transmitted to the venture capitalist.

In fact, there is evidence that less experienced venture capitalists take firms public too early in order to establish a reputation, a practice that has been called *grandstanding*. Grandstanding is costly for both the entrepreneur and the venture capitalist, since the earlier the firm goes public, the lower the price that investors are willing to pay for the firm's securities.

But a lower price for a portfolio firm's securities may not be the only problem. Subjecting a fledgling firm to the scrutiny of the public market before it is ready may reduce the firm's long-term likelihood of success. Even more significant, pressure to bring portfolio firms to market too early may bias the venture capitalist's investment decisions away from early stage firms toward later-stage firms. Thus, highly promising start-up firms might never get funded. [25]

Some Mechanisms Promote a Long-Term View. Even if certain pressures drive venture capitalists to push firms to market too quickly, the venture capital market also has countervailing mechanisms.

When a portfolio firm goes public, the venture capitalist doesn't just unload her investment and cash out, but instead retains a substantial stake in the firm. For example, in one study of venture-backed IPOs between 1978 and 1987, venture capitalists held 34.3 percent of the firm's equity before the offering and retained 24.6 percent of the firm's equity following the offering. (In nearly 60 percent of the cases in this sample, the venture capitalists didn't sell any of their stock.) And after a year, the average holdings fell to only 17.8 percent.[26] Retaining a substantial financial commitment to the firm after the IPO focuses attention on the firm's longer term prospects.

The design of the venture capital fund also promotes a long-term view. The venture capitalist's investors have made a 10-year commitment to provide money, with an option to extend this commitment up to three more years. This setup reduces pressure on the venture capitalist to rush a firm to market if, for example, a number of firms in the fund portfolio are developing more slowly than expected.[27] It also

[24]This point is made forcefully in the article by Josef Lakonishok, Andrei Shleifer, and Robert Vishny. Relative performance evaluation, in which a fund manager is rewarded and penalized according to how well he does compared with other fund managers, can promote a short-term horizon. This can be viewed as an agency cost of delegating investment decisions.

[25]See Gompers' 1996 article for evidence of grandstanding and his 1994 article for a discussion of the influence of institutional investors. There is some evidence of a shift toward later-stage investments following the entry of many institutional investors into the venture capital market in the early 1980s. But viewed over a longer period, there is evidence of a renewed shift toward early-stage investments. This reversal casts some doubt on claims that institutional investors are the cause of a bias toward short-term results in the venture capital industry.

[26]This evidence is from the article by Christopher Barry, Chris Muscarella, John Peavy, and Michael Vetsuypens. They also find that investors seem to view the venture capitalist's involvement as a certification of a firm's quality. For more empirical evidence on the role of venture capitalists in IPOs, see the article by William Megginson and Kathleen Weiss and Josh Lerner's 1994(b) article.

lessens the pressure to force a merger with a larger firm if the IPO market is cold. The setup of the venture capital fund is well adapted to reducing pressures on venture capitalists to choose myopic exit options.

CONCLUSION

Despite vibrant growth during the stock market and IPO boom of the mid-1990s, the venture capital industry is quite small if measured by the amount of funds mobilized. Even the $6.2 billion of new funds committed in 1996—a healthy jump from the $3 billion per year of the 1980s—is tiny when compared with $184 billion spent on research and development in the United States in 1996. But a list of the venture-backed firms that have grown to prominence in the 1990s suggests that the venture capital industry has had an effect out of proportion to the dollars invested.

As a form of intermediation, two distinctive features may help explain some of the successes of the venture capital industry. Unlike most intermediated finance in the United States, venture capital combines the provision of finance with active governance and control of the firm by the venture capitalist. Thus, entrepreneurs can finance the development of new ideas beyond the sometimes stifling confines of the large corporation but without losing access to professional management skills and strategic guidance. These features may increase the speed with which new ideas and products are brought to market.

The central role of public equity markets is the second distinctive feature of the venture capital industry. Success for a venture capitalist is measured by the number of firms taken public. This market test of success reduces intrinsic conflicts of interest between venture capitalists and their investors, although some observers argue that the drive to take firms public may also promote a short-term bias in making investment decisions. The central role of public equity markets in the venture capital process reflects the unique depth and sophistication of U.S. equity markets. Any attempt to reproduce the successes of the U.S. venture capital industry must rely on a well-functioning capital market or find some functional substitute.

[27]Some venture capital firms specialize in purchasing portfolio remnants, composed of portfolio firms that have yet to pay off after many years, but which are still too promising to liquidate. These portfolio remnants are called tailends and their component firms the living dead. Venture capitalists who specialize in resuscitating (or burying) the living dead are analogous to vulture funds in public debt markets or banks' workout specialists. See the article by Renee Deger.

REFERENCES

Barry, Christopher B. "New Directions in Research on Venture Capital Finance," *Financial Management*, 23 (Autumn 1994), pp. 3-15.

Barry, Christopher B., Chris J. Muscarella, John W. Peavy III, and Michael R. Vetsuypens. "The Role of Venture Capital in the Creation of Public Companies: Evidence from the Going Public Process," *Journal of Financial Economics*, 27 (1990), pp. 447-72.

Deger, Renee. "Buying the Living Dead," *Venture Capital Journal*, 35 (April 1995), pp. 41-42.

Fenn, George W., Nellie Liang, and Stephen Prowse. "The Economics of the Private Equity Market," Board of Governors of the Federal Reserve System, Staff Study 168 (December 1995).

REFERENCES (continued)

Gompers, Paul A. "The Rise and Fall of Venture Capital," *Business and Economic History*, 23 (Winter 1994), pp. 1-26.

Gompers, Paul A. "Optimal Investment, Monitoring, and the Staging of Capital," *Journal of Finance*, 50 (December 1995), pp. 1461-89.

Gompers, Paul A. "Grandstanding in the Venture Capital Industry," *Journal of Financial Economics*, 42 (1996), pp.133-56.

Gompers, Paul, and Joshua Lerner. "An Analysis of Compensation in the U.S. Venture Capital Partnership," Working Paper, Harvard University (August 1995).

Gompers, Paul, and Joshua Lerner. "The Use of Covenants: An Empirical Analysis of Venture Partnership Agreements," *Journal of Law and Economics*, 39 (October 1996), pp. 463-98.

Gorman, Michael, and William A. Sahlman. "What Do Venture Capitalists Do?" *Journal of Business Venturing*, 4 (1989) pp.231-48.

Heilemann, John. "The Networker," *The New Yorker*, August 11, 1997, pp. 28-36.

Lakonishok, Josef, Andre Shleifer, and Robert W. Vishny. "The Structure and Performance of the Money Management Industry," *Brookings Papers on Economic Activity: Microeconomics* 1992, pp. 339-79.

Lerner, Joshua. "The Syndication of Venture Capital Investments," *Financial Management*, 23 (1994a), pp. 16-27.

Lerner, Joshua. "Venture Capitalists and the Decision to Go Public," *Journal of Financial Economics*, 35 (1994b), pp. 293-316.

Lerner, Joshua. "Venture Capitalists and the Oversight of Private Firms," *Journal of Finance*, 50 (March 1995), pp. 301-18.

Lerner, Joshua. "The Government as a Venture Capitalist: The Long Run Impact of the SBIR Program," NBER Working Paper 5753 (September 1996).

Megginson, William L., and Kathleen A. Weiss. "Venture Capitalist Certification in Initial Public Offerings, " *Journal of Finance*, 46 (July 1991) pp. 879-903.

Peltz, Michael. "High Tech's Premier Venture Capitalist," *Institutional Investor* (June 1996), pp. 89-98.

Sahlman, William A. "The Structure and Governance of Venture-Capital Organizations," *Journal of Financial Economics*," (1990), pp. 473-521.

Venture Economics, *Venture Capital Journal*, 36 (February 1997), pp. 36-39.

Wetzel, William. "The Informal Venture Capital Market," *Journal of Business Venturing*," (1987), 2, pp. 299-314