

AN EXAMINATION OF THE COMPETITIVE ENVIRONMENT
WITHIN THE VENTURE CAPITAL INDUSTRY

by

KENNETH THOMAS SCHICIANO

B.S., Electrical Engineering
Duke University
(1984)

M.S., Electrical Engineering
Stanford University
(1985)

Submitted to the Sloan School of Management
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Master of Science in Management

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Alfred P. Sloan School of Management
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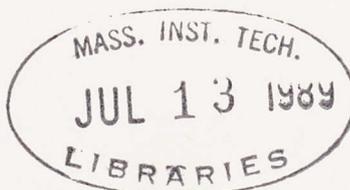
David Scharfstein
Assistant Professor of Finance
Thesis Supervisor

Signature redacted

Accepted by

Jeffrey A. Barks
Associate Dean, Master's and Bachelor's Programs

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ABSTRACT

The venture capital industry has been one of the primary contributors to the establishment and growth of the United States' high technology industry. The great successes venture capitalists have had during the formative stages of the venture capital industry have attracted record amounts of additional capital and professionals during the current decade. This success does not come without some new challenges however. The large increases in capital and professionals have created a more competitive environment within the venture capital industry.

This thesis examines the competitive environment within the venture capital industry. An increase in competition affects both the venture capital firms themselves, and the structure and size of new investments. This thesis focuses on the competitive environment facing venture capital firms targeting early-stage, high technology investments.

The research consisted of an analysis of the current available literature and a survey. This survey was distributed to 34 venture capital firms in an attempt to measure the level of competition along several dimensions. The respondents provided both quantitative and qualitative responses, and this thesis attempts to draw conclusions from their responses and the current literature and investment data.

Thesis Supervisor: Dr. David Scharfstein
Title: Assistant Professor of Finance

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I. INTRODUCTION

Stanley Pratt, one of the leading authorities on the venture capital industry, defines venture investing as "the business of building businesses¹". More specifically, venture capitalists, in somewhat the same fashion as other financial intermediaries, invest capital in businesses with the expectations of realizing increased returns. The major distinguishing feature of venture investing is the continuous active involvement of the venture capitalist in the management of portfolio companies. In general, venture investments can be characterized as²:

1. Illiquid investments made over a five to ten year time horizon.
2. Risky investments which can generate a correspondingly high rate of return.
3. Investments made in return for a significant portion of equity.
4. Investments in which the venture capitalist actively helps to manage.

¹ Bigler, Harold E., Venture Capital: A Perspective, (USA:1983), page 1.

² Sahlman, William A., & Soussou, H., Note On The Venture Capital Industry (1981), (Boston, MA: Harvard Business School, 1985), page 1.

Through this active participation, the venture capitalist increases the value of the company, and thereby increases the return which can ultimately be realized from the investment.

The venture capital industry has experienced explosive growth during the 1980s as measured by the number of professionals making venture investments and the amount of capital available to make such investments. This growth contrasts with the club-like and closely networked structure which characterized the venture capital industry during its development. This growth has led to the perception that competition between venture capital firms has increased recently. Several sources have publicly stated that there is an excess of capital and professionals searching for new investment opportunities ^{3,4,5}.

This thesis is a pilot study into the extent and effects of competition within the venture capital industry. The primary objectives of this thesis are threefold: (1) to propose several industry characteristics which can be used to gauge the level of competition, (2) to measure the level of

³ "Too Much Money, Too Few Deals," Forbes, March 7, 1988, Pg. 144.

⁴ "A Case Of Too Much Money," Fortune, November 7, 1988, pages 95-104.

⁵ "Suddenly, A Good Startup Is Hard To Find," Business Week, December 12, 1988, pg. 37.

competition using these characteristics, and (3) to explore the implications of the competitive environment within the venture capital industry.

This thesis is focused specifically on competition between venture capital firms targeting early-stage, high technology investment opportunities. Typically, these opportunities involve companies competing in areas such as computers, software, electronics, communications, and biotechnology. Much of the research was conducted through a literature review and a survey. This survey was distributed to 34 venture capital firms, the objective of which was to attempt to measure the level of competition in several areas.

Section II reviews the history and development of the venture capital industry. This industry began as an informal and private network of wealthy individuals and families who provided capital to entrepreneurs such as Alexander Graham Bell and Henry Ford. Successful investments slowly attracted new professionals and additional capital during the 3 decades following World War II. For the 10 year period from 1978 to 1987, the number of firms and professional venture capital investors (partners and associates) grew from 237 firms and 597 professionals to 627 firms and 2,378 professionals

(increases of 165% and 298% respectively)⁶. During this same period, the total venture capital pool has grown from \$2.5 billion to \$29 billion (1060% growth)⁷.

How has this growth affected the venture capital industry? Is there "too much money, too few deals?" What have been the effects of this growth on competition within the venture capital industry?

Section III analyzes the venture capital industry in the context of the competitive forces which are present. This analysis follows that layed out by Michael Porter in Competitive Strategy.

Section IV reviews the current available literature, and analyzes data on investment valuations and pricing, fund sizes, committed capital, and historical rates of return. An attempt is also made to study the time required to close an investment, and the growth in firms which are adopting specific investment strategies.

⁶ "Record Growth in Venture Industry Resources in 1987 Brings Capital Pool to \$29 Billion," Venture Capital Journal, April, 1988, page 8.

⁷ Ibid, page 8.

The data indicate that the investment valuations have been rising together with fund sizes and committed capital. There is a consensus that rates of return have been declining. The valuation of a company is affected by the industry sector in which the company is competing, the timing of the investment (e.g., whether the investment occurs in periods of rising or falling valuations), and the perceived level of business risk⁸. Valuations can rise for several reasons such as inflation, more experienced entrepreneurs who add value to the investment, increasing levels of required capitalization to compete in the targeted industry sector, or competition between venture capital firms to secure an investment.

Potential indicators of increasing competition are:

1. Decreasing time for investments to close. As competition between firms increases, closing times may decrease as firms try to secure deals from other firms considering the investment.

2. Increases in valuations. As the size of venture firms' capital under management increases, the need to invest larger sums of capital each year correspondingly increases.

⁸ Coopers & Lybrand, Venture Capital: The Price of Growth, (Coopers & Lybrand: USA, 1986), p. 4-5.

In this situation, entrepreneurs can gain some additional control over the investment process and demand a higher valuation from the venture capitalist (increased buyer bargaining power). Additionally, venture firms may increase valuations in order to attract the entrepreneurs. As the valuation increases, the entrepreneur retains more equity, and is thus attracted to the venture capitalist with the highest valuation (in effect, the highest price). This increase in valuations can be compared somewhat to a bidding process, in which the entrepreneur is attracted to the highest bidder.

3. Oversubscribed investments. The growth of the total venture capital pool has resulted in an environment in which there is an excess of committed capital to the industry. During the last 5 years, the capital committed to the venture capital industry has exceeded the disbursements by the firms (see Chart 2.04). This results in a situation where investment opportunities may attract more capital than is appropriate (e.g., there is an excess demand for the particular investment).

4. Changes in investment strategies by firms. One change in strategy would be an increase in seed/incubation investments. By doing this, venture capitalists may be

trying to generate a source of higher quality early stage investments where they have an increased degree of control or knowledge. Also, venture capitalists are specializing in certain industry sectors in order to differentiate themselves and attract the attention of potential limited partners and entrepreneurs.

Section V reviews the results of my survey. The intent of Section V is to explore venture capitalists' attitudes toward actual or perceived competition. The objective here is to attach further understanding to the information presented in Section IV.

Section VI is the conclusion. Overall, there is a growing perception that the competitive environment within the venture capital industry is increasing, although several venture capitalists steadfastly deny this. Several firms have adopted more pro-active, aggressive techniques in order to locate and close attractive investments. It is apparent that competition will continue to increase while the amount of capital and number of professionals within the venture capital industry continue to grow.

II. DESCRIPTION OF THE VENTURE CAPITAL INDUSTRY

A. Historical Development

A famous investment in a very risky venture can be traced back to Queen Isabella's sponsorship of Christopher Columbus' exploration of the new world⁹. Although Queen Isabella did not take an active role in the management of the business, the characteristics of the investment are similar to that of current venture investments.

There are many ways to finance start-up enterprises, such as personal savings, loans from friends and relatives, loans from banks, private placements, and venture capital. Venture capital is sometimes thought of as "the early-stage financing of new and young companies seeking to grow rapidly¹⁰." The major differentiating factors of venture investing are the high degree of equity participation and illiquid and long-term investment horizon¹¹.

During the 1800's and early 1900's American entrepreneurs' capital requirements were satisfied by friends, relatives and other informal sources. The more famous of these

⁹ Bigler, Harold E., Venture Capital: A Perspective, (USA: 1983), page 5.

¹⁰ Pratt, Stanley E. & Morris, Jane K., eds., Pratt's Guide to Venture Capital Sources Eleventh Addition, (Wellesley Hills, MA: Venture Economics, 1986), page 7.

¹¹ Ibid, page 7.

entrepreneurs include Thomas Edison, Alexander Graham Bell and Henry Ford. Post World War II venture activities were supported by members of wealthy families such as Laurence Rockefeller, Andrew Carnegie, and J. H. Whitney. These men are often credited for institutionalizing the venture capital investment process.

Although the venture capital industry was beginning to emerge at this time, its operations were still informal and private. In 1946, American Research and Development (ARD) Corp. was founded in Boston by General Georges Doriet of the Harvard Business School. One of ARD's earliest ventures was a \$70,000 investment in Digital Equipment Corporation in 1957. This is, arguably, the start of more formal venture investment activities in the United States. ARD was significantly different from the private venture capital sources available at this time; most significantly, ARD was capitalized through public stock.

In 1958 Congress passed the Small Business Investment Company (SBIC) Act in order to stimulate entrepreneurial investments¹². SBICs are private or affiliated investment companies which are offered tax concessions by the government

¹² Ibid, page 7.

and the opportunity to leverage their capital resources through below market rate government sponsored loans. This was a very popular investment vehicle, and by 1964 the number of licensed SBICs grew to over 600¹³. Commercial banks, through affiliated SBICs, could now enter into high risk venture investments. SBICs however, are hindered by government budgets, loan repayment obligations, and SEC regulations. Over the last several years, SBICs have been declining in importance. One reason for this is the uncertainty of the legislation authorizing the Corporation for Small Business Investment (COSBI)¹⁴.

The initial development of the venture capital industry occurred during the years 1950-1977. During this time 3 states (more appropriately, cities or regions in these states) became established as venture capital leaders: California and Massachusetts due to their emerging and fast growing high-technology based industries and strong academic communities, and New York City through its strong ties to the financial community.

¹³ Wilson, John W., The New Venturers: Inside the High Stakes World of Venture Capital, (Massachusetts: Addison-Wesley Publishing Company, 1986), page 22.

¹⁴ "1988 Venture Industry Growth Brings Capital Pool to \$31 Billion," Venture Capital Journal, March, 1989, p. 10.

J.H. Whitney created the private partnership structure, which is typical of private venture firms today, when he formed his firm J.H. Whitney & Co in 1946. This partnership structure consists of general partners and limited partners. General partners manage the capital and the portfolio companies, while the limited partners provide the capital for investment. Whitney's early investments included Memorex and Minute Maid. Laurence Rockefeller's informal venture investment activities were organized into a private partnership, called Venrock Associates, in 1969. His early profits came from investments in Boeing, Eastern Airlines, and Itek Corp. J. H. Whitney & Co. and Venrock Associates were also early participants in many high technology investments in California during the same period.

The venture capital industry came of age during the 1960s in Northern California; the home of Silicon Valley, Stanford University, and U.C. Berkeley¹⁵. Arthur Rock, a former Wall Street investment banker, invested in Fairchild Semiconductor in 1958. Rock continued to invest in emerging California companies from the east coast and soon decided that the lack of venture capital on the west coast presented an opportunity¹⁶. Rock joined forces with Tommy Davis in 1961 to

¹⁵ Wilson, page 31.

¹⁶ Wilson, page 34.

form the now famous Davis & Rock partnership. Fairchild eventually spawned National Semiconductor, Intersil, Advanced Micro Devices and Intel. These semiconductor firms were all started with venture capital.

During this time, many other high technology companies were also being formed with the aid of venture capital investments. A sample of some other major California firms investing during this time were Kleiner-Perkins (Eugene Kleiner initiated the Fairchild deal with Arthur Rock), Mayfield Fund (started by Tommy Davis after Davis and Rock dissolved in 1968), Sutter Hill Ventures (close ties with J.H. Whitney), and Institutional Venture Associates (Institutional Venture Partners and Technology Venture Associates were later created from IVA).

It can be inferred from this incomplete lineage that the venture capital firms established at this time had many direct and indirect ties to each other. In fact, the partners of a select group of California firms were members of what came to be known as "The Boys Club" or, on the east coast, as "The San Francisco Mafia¹⁷." The partners at these firms shared many investments among themselves, to the dismay

¹⁷ Wilson, page 49.

of both larger and smaller east coast firms who desired an active role in this investment activity.

Thus, even in the early stages of the venture capital industry a competitive environment existed between firms on the east and west coast. Sutter Hill Ventures experienced competition from Bessemer Securities (an east coast financial firm) in the 1968 financing of Measurex Corp. Although Sutter Hill spent an enormous amount of time and energy putting the deal together, it was not until Bessemer committed \$600,000 (and acquired a large percentage of the deal in the process) that the deal was completed¹⁸. Although these type of events were rare, it nevertheless hinted at the potential for competitiveness in the venture capital industry.

Established firms based in Boston have early ties to ARD, the surrounding academic communities of M.I.T. and Harvard, and the high technology firms located on Route 128. Early Boston venture capital firms include the Charles River Partnership, Greylock Management Corp., and TA Associates. The Charles River Partnership has ties to M.I.T.'s technical community, while Greylock's founder, and its current president both

¹⁸ Wilson, page 42.

embarked on their venture capital careers at ARD. TA's founder, Peter Brooke, graduated from the Harvard Business School. The early establishment of these firms enabled them to participate in many early and profitable venture investments.

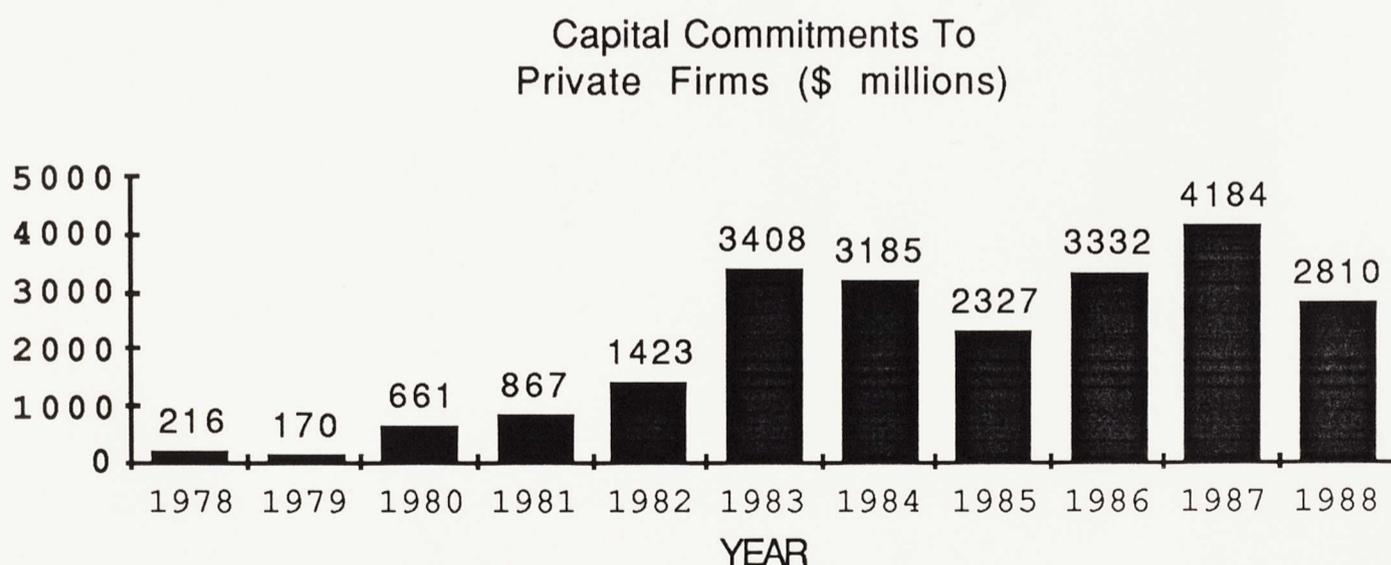
An Industry or a Fraternity?

A definite bias to share deals strictly among the core firms quickly created a hierarchy of venture capital firms in this era. A firm's position within this hierarchy was based primarily on the age and investment experience of the firm, personal and professional relationships of the general partners within the firm, past venture investment successes, and the deals a firm was either invited to invest in, or invited other peer firms to invest in. Firms in the highest echelons of the hierarchy generally participated in the better deals, gained leverage in setting prices, achieved better returns, and correspondingly, could easily raise additional venture funds. The venture firms which participated in the early investments of the 1960s and 1970s continue to represent a powerful force in the venture capital industry.

The year 1978 was a major turning point in the venture capital industry. A reduction in the capital gains tax rate

from 49% to 28% stimulated the investment environment. In addition, a change in the "prudent man" rule of the Employee Retirement Investment Savings Act (ERISA) allowed pension fund assets to be invested with venture capital firms. These changes significantly increased the amount of capital available for venture investing and the level of venture investment activity.

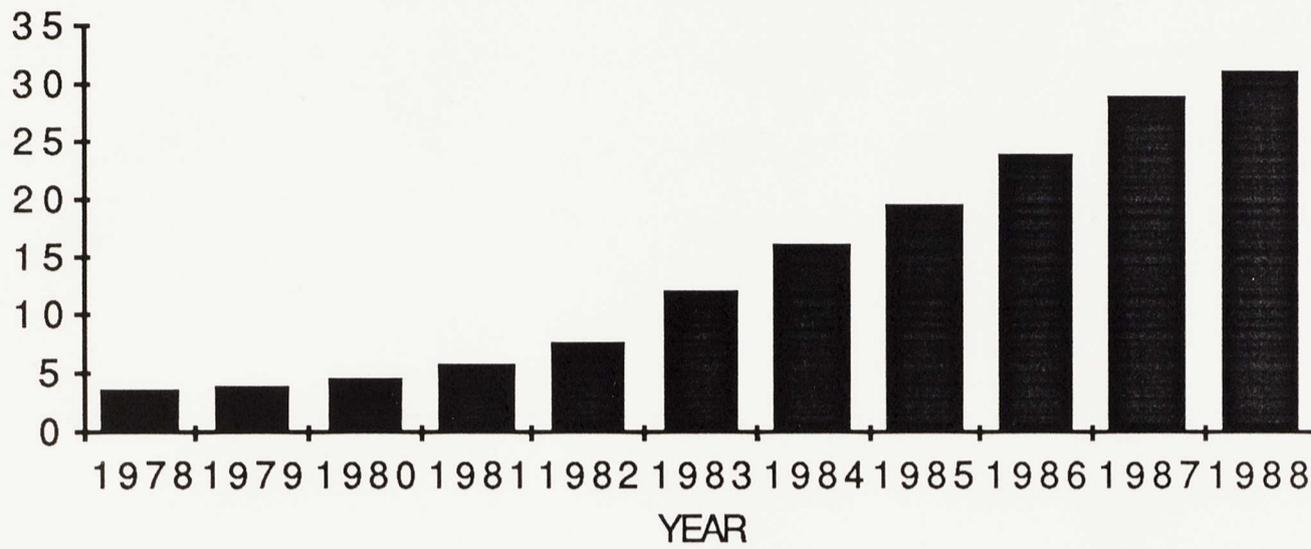
During the 1980s, the capital committed to private venture capital partnerships and the total venture capital pool, and the number of new partnerships created rose dramatically. Charts 2.01 through 2.03 trace the total new capital committed to the private venture partnerships, the size of the total venture capital pool, and the number of new partnership formations for the period 1978 - 1988.



Source: Venture Capital Journal, February, 1989, pg. 13.

CHART 2.01

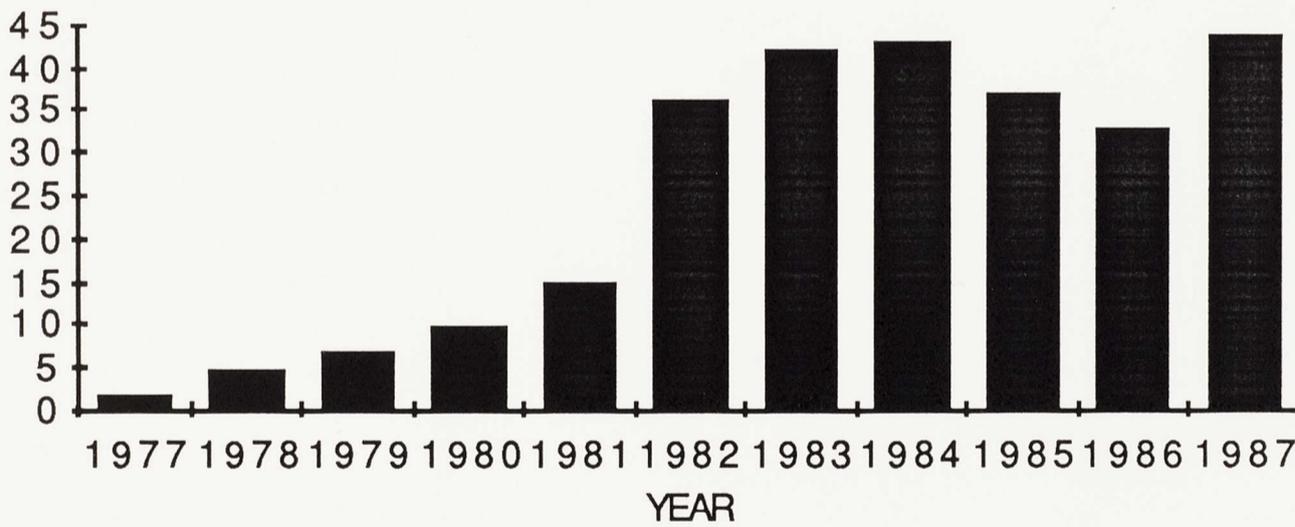
**VENTURE CAPITAL INDUSTRY
TOTAL CAPITAL POOL (\$ billions)**



Source: Venture Economics, Wellesley, MA

CHART 2.02

New Partnership Formations



Source: Venture Economics, Wellesley, MA

CHART 2.03

The huge increase in new capital, new investments, and new partnership formations in 1982-1984 was brought about because of a very receptive initial public offering (IPO) market in 1983. During the early 1980s many investments were made at high valuations, and in marginal companies with little regard to long run viability¹⁹. This period was described as a "feeding frenzy" by an observer of the venture capital industry²⁰. Stanley Pratt has referred to this period as the "silly season"²¹. The effects of this environment, which resulted in the overfunding of the Winchester Disk Drive industry, are well documented²². A total of \$400 million was invested in 43 Winchester Disk Drive manufacturers between 1977-1984, of which \$270 million (67.5%) was invested during 1983-1984²³. Currently, only about a half dozen of these manufacturers remain in business²⁴.

The years 1984-1985 found many venture capital partnerships with troubled portfolio companies which required much attention and additional capital. Raising new funds began to

¹⁹ Wilson, page 195.

²⁰ Ibid, page 195.

²¹ "Venture Capital After The Fall," Inc., December, 1987, page 187.

²² Sahlman, William A. and Stevenson, Howard H., Capital Market Myopia, Harvard Business School.

²³ Ibid, page 1.

²⁴ "Venture Capital After The Fall," Inc., December, 1987, page 187.

become more difficult, and venture capitalists needed new ways to distinguish themselves to attract the attention of both limited partners and entrepreneurs. Many firms began to articulate specific investment strategies such as specialization by investment stage, industry, or geographic location²⁵.

During the last five years, commitments to the venture capital industry have exceeded disbursements, as shown in Chart 2.04.

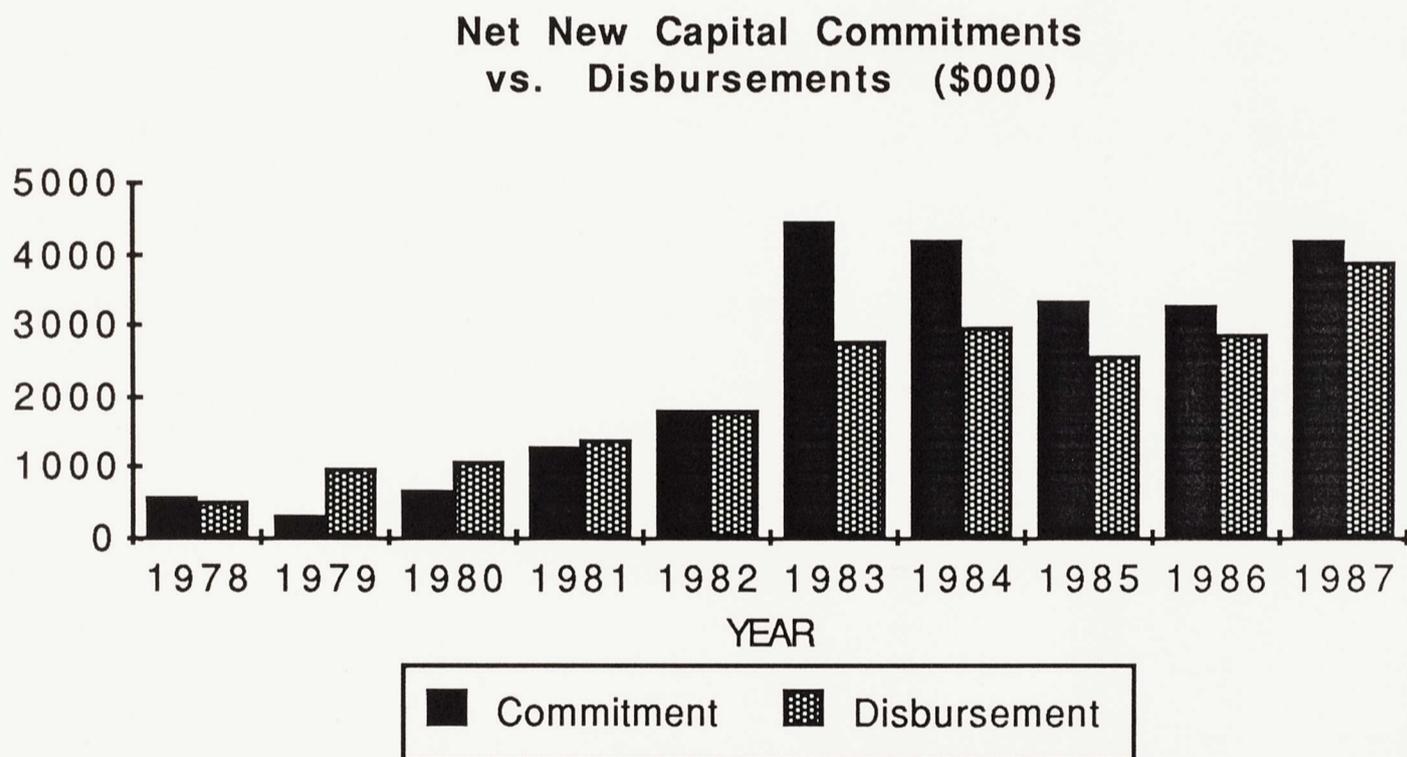


CHART 2.04

Source: Venture Economics, Wellesley, MA.

²⁵ "Specialization Takes Hold," Pensions & Investment Age, November 24, 1986, page 13.

This chart highlights illustrates the fact that a portion of the capital committed to the venture industry could not be invested. An environment exists where the supply of capital has exceeded the number of investments in which to put the capital to work. In 1986 and 1987 there has been a reduction in this spread, which indicates that firms are beginning to find more investments. It is too early to tell how successful this increased investment pace will be.

Some industry observers expect rough waters ahead for the venture capital industry such as a reduction in returns, consolidation, and failure²⁶. It is clear that the record amounts of new capital and professionals that have been attracted to the industry have changed the once collegial investment environment.

B. Structure and Components of the Industry

1. Partnerships

The majority of private venture capital firms are organized as limited partnerships. The limited partners are the investors who commit capital to a specific partnership or fund. In general, there are multiple limited partners who

²⁶ "Too much money, too few deals," Forbes, March 7, 1988, page 144.

commit various amounts of capital to a fund. The general partners actively manage the investments. The limited partners have no control over the specific investments made by the general partners, and are not held liable for any obligations of the fund. Many partnerships have a ten year life - that is, the investments must be harvested and liquidated by the end of the ten year period. The limited lifetime of the partnership creates growing pressure for larger funds which must invest greater sums of capital each year. This is necessary in order to allow the normal venture investment cycle to occur prior to the expiration of the partnership.

Many venture firms have several active funds or partnerships. For example, a firm may have one partnership near the end of its life, where the partners are attempting to harvest the few remaining investments. In addition, there usually is a second partnership which may be nearly fully invested and beginning to realize some returns, and possibly a third partnership which is just beginning an investment cycle. The average number of active funds reported in the survey was 2.58 (see Appendix B).

2. Types of Firms

The Venture Capital Journal groups venture firms into four general classes:

1. Independent private and public firms. This category includes institutionally and non-institutionally funded firms, family groups and affiliated SBICs. This is the largest class of venture firms, both in absolute number, and capital under management (see Chart 2.05).

2. Subsidiaries and affiliates of financial corporations. This category includes banks (investment and commercial), insurance companies, and affiliated SBICs.

3. Subsidiaries and affiliates of industrial corporations, including affiliated SBICs.

4. Unaffiliated private and public venture capital SBICs.

Chart 2.05 illustrates the change in total capital resources from 1985-1988 by type of firm. This chart highlights the dominance of the independent private firms compared with the rest of the industry. Independent private firms now manage

80% of the total industry resources and are the most significant segment of the venture capital industry²⁷.

TOTAL CAPITAL RESOURCES BY TYPE OF FIRM (\$ billions)				
<u>TYPE OF FIRM</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Independent, Private	14.78	18.80	23.38	25.73
Corporate, Financial	2.45	2.66	3.11	2.87
Corporate, Industrial	1.66	2.04	1.89	2.08
Other SBICs	<u>0.68</u>	<u>0.64</u>	<u>0.64</u>	<u>0.46</u>
TOTAL	19.6	24.1	29.0	31.1

Sources: Venture Capital Journal, April, 1988, pg. 10.
Venture Capital Journal, April, 1987, pg. 11.
Venture Capital Journal, June, 1986, pg. 8.

CHART 2.05

The increasing number of private firms, with ever increasing pools of capital and numbers of professionals continue to strive to differentiate themselves. Specialization appears to be one method of differentiation. Many younger firms will focus on a specific industry segment, or area of technology, in order to gain a competitive edge in locating and securing new deals²⁸. The partners of these firms tend to have less tenure within the venture capital industry, and manage

²⁷ "1988 Venture Industry Growth Brings Capital Pool To \$31 Billion," Venture Capital Journal, March, 1989, page 9.

²⁸ "Venture Funds Stop To Catch Their Breath," Venture, June, 1984, page 54.

smaller pools of capital. Specializing in one or two industries allows the firm to take advantage of the partners' expertise in particular areas.

Other venture capital firms are specializing by stage of investment. A recent trend has been to focus on leveraged buy-outs and management buy-outs of businesses with a significant technology content²⁹. The technology content generally makes these investments unsuited for general LBO firms, and are more suited to venture capital firms whose partners have high technology investment experience.

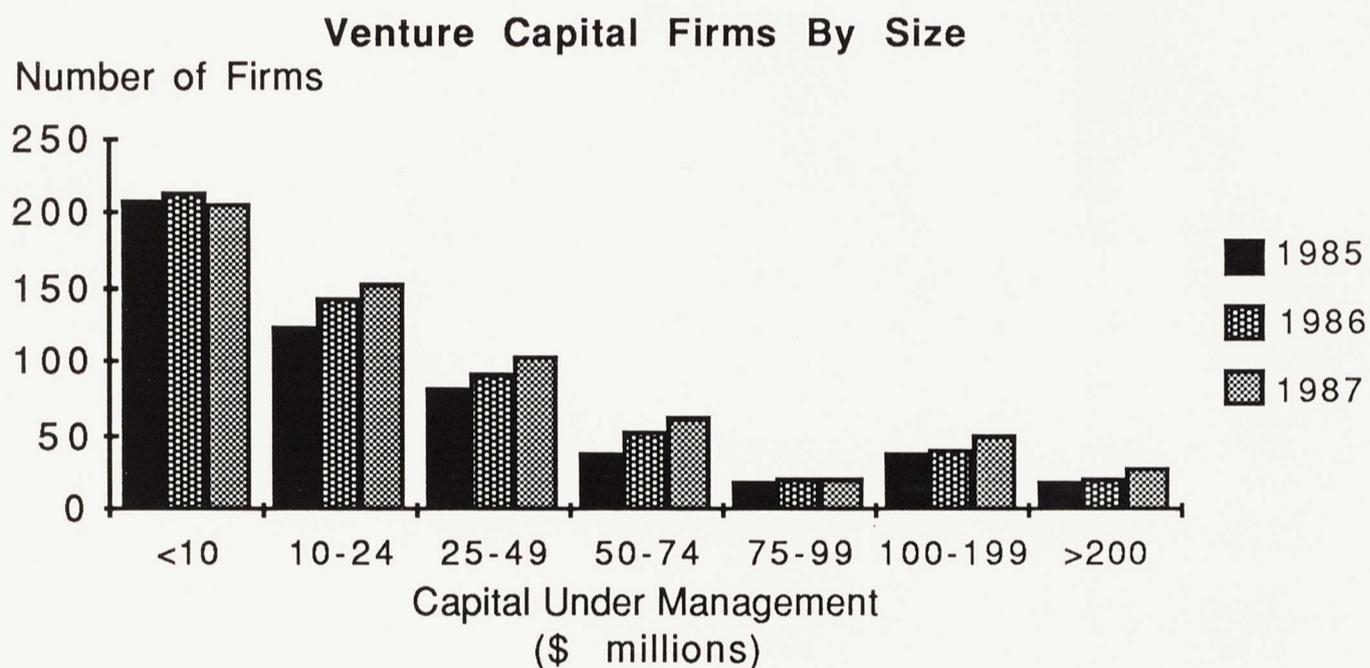
Although specialization appears to be one method of differentiation, many of these firms will still consider investments in many of the general industry groups identified in Pratt's Guide to Venture Capital Sources. One author has speculated that the generalist/specialist categorization is used as a marketing tool to generate perceived differentiation among firms³⁰. In one instance, an entrepreneur has reported that venture firms, who advertised themselves to be specialists in the retail industry, in fact

²⁹ "The Grass Looks Greener," Forbes, January 26, 1987, pages 50-51.

³⁰ Leone, Douglas M., The Role Of Venture Capitalists In The Management Of Portfolio Companies, M.I.T. Sloan School of Management, Master's Thesis, January, 1988, page 18.

required an inordinate amount of explanation of the industry³¹. This increased desire for differentiation is indicative of an increasingly competitive industry³².

Some additional statistics indicate the increasing strength of the larger, more experienced venture firms. A greater majority of the capital under management is controlled by fewer firms, as indicated in Charts 2.06 and 2.07.



Source: Venture Capital Journal, June, 1986 pg. 11.
Venture Capital Journal, April, 1987 pg. 15.
Venture Capital Journal, April, 1988, pg 12.

CHART 2.06

31 "What Do You Want From a Venture Capitalist," Venture, August, 1987, page 30.

32 "From Trend to Trend - Observations of a Pendulum," Venture Capital Journal, May, 1986, page 8.

**SEGMENTATION OF VENTURE CAPITAL POOL
BY SIZE OF FUND UNDER MANAGEMENT**

Size of fund under management (\$ MM)	TOTAL DOLLARS MANAGED (\$ billions)			% OF TOTAL POOL		
	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
< 10	0.7	0.8	0.8	3.7	3.3	2.6
10-24	1.9	2.2	2.4	9.7	9.1	8.1
25-49	2.8	3.1	3.5	14.4	12.9	12.1
50-74	2.2	3.0	3.5	11.3	12.4	12.1
75-99	1.6	1.8	1.9	8.0	7.5	6.4
100-199	5.2	5.7	7.0	26.6	23.7	24
>200	<u>5.2</u>	<u>7.5</u>	<u>10.1</u>	<u>26.3</u>	<u>31.1</u>	<u>34.7</u>
TOTAL	19.6	24.1	29.2	100%	100%	100%

Source: Venture Economics, Wellesley, MA.

CHART 2.07

The venture investment experience of a firm's general partners is also a significant factor in the industry. Chart 2.08 illustrates the capital committed to venture firms by partner experience level, and Chart 2.09 shows the number of firms by experience level.

**PRIVATE VENTURE CAPITAL FIRMS:
Capital Resources By Experience Level**

<u>EXPERIENCE LEVEL</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
< 3 Years	9%	9%	8.5%	7%
3-4 Years	13%	11%	9.5%	10%
5-9 Years	15%	19%	21%	25%
> 10 Years	63%	61%	61%	58%

Sources: Venture Capital Journal, June, 1986, pg. 10.
Venture Capital Journal, April, 1987, pg. 12.
Venture Capital Journal, April, 1988, pg. 13.
Venture Capital Journal, March, 1989, pg. 14.

CHART 2.08

**PRIVATE VENTURE CAPITAL FIRMS:
% Number Of Firms By Experience Level**

<u>EXPERIENCE LEVEL</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
< 3 Years	31%	29%	26%	26%
3-4 Years	19%	19%	20%	20%
5-9 Years	18%	21%	22%	22%
> 10 Years	32%	31%	32%	32%

Sources: Venture Capital Journal, June, 1986, pg. 10.
Venture Capital Journal, April, 1987, pg. 12.
Venture Capital Journal, April, 1988, pg. 13.
Venture Capital Journal, March, 1989, pg. 14.

CHART 2.09

Most significant is the fact that firms with greater than ten years of experience comprise 32% of the total number of firms, but control 58% of the capital pool. These statistics

however, may not tell the whole story. An experienced venture capitalist has noted that within the independent private venture capital firm sector, 300 KEY partners control 70% of the assets³³.

The increasing concentration of larger pools of capital with the largest, more experienced firms has created the potential for a more competitive environment within the industry. This competition can come from two primary sources:

1. Firms managing large funds have the capacity to satisfy most investment sizes, especially smaller, early stage investments. In this situation, large firms may not syndicate deals because of the increased pressure to invest larger sums of capital. Thus, competition between large firms can result as the required investment activity increases.

2. Similar size, or smaller firms may try to participate in smaller investments by increasing the valuation in order to attract the entrepreneur.

³³ Knox, Robert; Presentation to the Sloan Venture Capital Club, October 28, 1987.

In both cases, competitive bidding between the firms may result. The results from the survey indicate that the latter case is a source of competitive bidding, rather than the former.

3. Investment Stages

There are 3 general categories of investment stages: early stage, later/follow-on stage, and mezzanine/buyout investments. Each stage is differentiated by the time horizon, potential returns, and typical investment size. Diversification into various investment stages by venture capital firms reduces the riskiness of the venture investment portfolio. Despite this reduction in risk, there has been a trend toward stage specialization by many young venture capital firms, in part as a way to take advantage of the general partners' specific skills, and as a response to the competitive environment within the industry.

Early Stage Investments

Early stage financing can be subdivided into 2 basic categories: seed/incubation and startup/first-stage. Seed financing is characterized by investments in entrepreneurs who require capital to complete a business plan or prove the feasibility of an idea. This is the most risky investment, but provides the potential for the highest returns.

Startup/first-stage investments typically provide capital to build initial and manufacturing prototypes, and to begin the initial marketing and production of products. Companies at this stage have not yet sold any commercial products and thus still represent a significant risk.

Later Stage Investments

Later stage venture investments provide capital for initial company expansion. A company at this stage generally has a completed product and may be showing a profit, but generally has increasing accounts receivable and inventories (e.g., negative cash flow) which need to be financed. Later stage financing also provides capital for major expansion of profitable companies.

Other Investment Stages

The general types of investments here include mezzanine financings, management buy-outs (MBOs), leveraged buy-outs (LBOs), turn-around investments, and public acquisitions. Bridge or mezzanine financing is an investment of capital 6 months to 1 year prior to an Initial Public Offering (IPO). In times when the IPO market is slow, this stage of financing is extremely important. MBOs and LBOs involve the acquisition of going concerns through the use of leverage.

Capital requirements in these situations are generally higher, the returns are lower, and the operating risks are lower.

Chart 2.10 shows the disbursement by investment stage for the period 1984-1987.

DISBURSEMENTS BY FINANCING STAGE

	<u>Percent Of Number Of Financings</u>				<u>Percent of Dollar Amount Invested</u>			
	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1988</u>
Early Stage	46%	37%	39%	38%	34%	24%	33%	28%
Later Stage	43%	51%	44%	48%	54%	60%	44%	54%
Other	<u>11%</u>	<u>12%</u>	<u>17%</u>	<u>14%</u>	<u>12%</u>	<u>16%</u>	<u>23%</u>	<u>18%</u>
	100%	100%	100%	100%	100%	100%	100%	100%

Sources: Venture Capital Journal, May, 1985, pg. 14.
 Venture Capital Journal, May, 1986, pg. 15.
 Venture Capital Journal, May, 1988, pg. 17.

CHART 2.10

4. Investment Terminology

In general, the value or net worth of a company is the assets less any liabilities plus the value of the growth opportunities present. Startup companies generally have very little in the way of assets or liabilities. Primarily, the value of the company is based on the strength of the management team, the proprietariness of the product, the

potential for a large and growing market, and the existence of an easily identifiable set of potential customers. Entrepreneurs must trade equity in their company in return for venture financing, and they desire to trade the minimum amount of equity for the maximum possible amount of capital.

The "pre-money" value of the company is a function of the internal company characteristics (management team, stage of product development, targeted industry, size of the potential market), or in general, the value that the entrepreneur "brings to the table." The "post-money" value of the company is a function of the amount of the financing and the amount of equity that is exchanged.

In a recent study by Coopers & Lybrand of 85 high technology companies financed from 1980-1986, the average pre-money valuation for a first round financing was \$3.6 million³⁴. The size of the average first round financing was \$2.1 million, in exchange for 37% of the equity, which translates to a post-money valuation of \$5.7 million (\$2.1 million divided by 37%).

³⁴ Coopers & Lybrand, page 7.

III. FRAMEWORK OF COMPETITIVE FORCES

An analysis of the potential competitive forces which impact the venture capital industry can be identified by the framework conceptualized by Michael Porter³⁵. The five generic sources of competitive forces are: (1) threat of new entrants, (2) bargaining power of buyers, (3) bargaining power of suppliers, (4) threat of substitute products and services, and (5) rivalry among existing competitors.

The competitive forces active within the venture capital industry stem from potential entry of new venture firms, the increasing bargaining power of the limited partners (suppliers of capital), the increasing sophistication of entrepreneurs which require capital (buyer bargaining power), alternative sources of capital (threat of substitutes), and the increasing competition between existing venture firms.

A. Potential Entrants

Entry into the venture capital industry basically requires forming a partnership, raising capital and locating new businesses to invest in. Raising capital for private partnerships requires either very wealthy general partners, or locating suitable limited partners. Sometimes, experienced general partners will leave an existing firm to form their own partnership and enter the industry. This form

³⁵ Porter, Michael E., Competitive Strategy, (New York: The Free Press, 1980), page 6.

of entry was especially prevalent during the period 1982-1984³⁶.

Subsidiaries of financial and industrial corporations can gain access to a source of internal capital. Recently, both consulting firms (A. D. Little, Boston Consulting Group, and Bain to name a few) and investment banks (Salomon Brothers, Morgan Stanley) have created venture capital groups. Their wealth of contacts, previous business experience, and existing capital base allowed them to overcome the initial entry barriers. As Charts 2.07 and 2.08 indicate though, more experienced private venture firms continue to dominate the industry.

Although it appears as though entry into this industry is relatively easy, substantial mobility barriers exist which severely limit the competitive posture of younger firms within the industry. The strongest mobility barrier is the experience level of the firm (as measured by both the individual partner's experience, and the ENTIRE firm's experience together as a team). Overall, of the 627 private venture firms in the industry in 1987, 31% have at least 1 partner with greater than 10 years of experience. These firms

³⁶ "Venture Funds Stop To Catch Their Breath," Venture, June, 1984, page 55.

manage 61% of the total venture capital pool (\$29 billion , year-end 1987).

The more experienced firms have many close relationships with other firms which sometimes results in the syndication of deals among these firms. Many times, these deals represent excellent investment opportunities and are generally not available to firms outside the syndicate. As indicated earlier, syndication may be less prevalent due to the pressure larger firms are facing to invest their current capital. Also, larger funds (generally corresponding to the more experienced firms), have generated greater internal rates of return (IRR) than the firms managing smaller pools of capital³⁷.

Institutional investors are becoming increasingly sophisticated and more selective about the firms, and the individual partners within a particular firm, in which they choose to invest³⁸. In 1988, of the \$2.8 billion of committed capital to private partnerships, \$1.3 billion was committed by pension funds (47%), and of this total, only 9% was

³⁷ Venture Capital Performance: Review Of The Financial Performance Of Venture Capital Partnerships, Venture Economics, Inc., 1988.

³⁸ "Venture Funds Stop To Catch Their Breath," Venture, June, 1984, page 55.

committed to firms with partners having less than 5 years of venture experience³⁹.

In fact, increasing numbers of large institutional investors are focusing on past investment track records and industry tenure when deciding which venture firms to invest in^{40,41}. Co-investment or syndication patterns also play an important role from both the demand and the supply side. Institutional investors are analyzing co-investment and syndication patterns when evaluating an investment decision with a particular firm⁴². From the demand side, entrepreneurs and other venture capitalists base co-investment decisions on, among other things, the past track record of the firm. These trends do not support the younger, lesser known firms.

Mobility barriers such as deal flow, and ability to raise capital are directly related to the past history, investment successes, and contacts of the partners in the firm. New firms without such histories have extremely high mobility barriers to overcome within the venture capital industry.

³⁹ "Venture Funds Raise \$2.8 Billion In New Capital," Venture Capital Journal, February, 1989, page 18.

⁴⁰ Ibid, page 22.

⁴¹ "Observations and Insights," Venture Capital Journal, April, 1987, page 1.

⁴² "Record Growth In Venture Industry Resources In 1987 Brings Capital Pool To \$29 Billion," Venture Capital Journal, April, 1988.

B. Suppliers of Capital

Institutional investors are bringing increasing pressure to bear on venture capital firms. In Competitive Strategy, Porter identifies several conditions which can create an environment with high supplier power:

1. The supplier group is concentrated.
2. There are no substitute suppliers.
3. The industry is not an important customer of the supplier.
4. The suppliers' product is a critical component to the buyers' business.
5. The supplier groups' products are differentiated, which makes switching costs high.
6. Suppliers pose the threat of forward integration.

In the current industry environment, pension funds are a concentrated supplier group. Pension funds can exert pressure on venture firms primarily through items 3 and 4 above. Venture investments by pension funds are, by law, limited to a very small fraction of the total pension assets. The bulk of pension fund assets are invested in fixed income securities and public equity. From the venture capital firm's perspective, however, pension funds are a critical component of their business (pension funds contributed to 47% of the net new capital raised by private venture firms in 1988).

Vertical integration of venture investing by large institutions is a potential threat. Pension funds and endowments generally have a long-term investment horizon, which is a necessary prerequisite for venture investing. Venture capital firms, however, bring a high value-added to companies they invest in (especially early stage investments). There is potential for institutional investors to directly participate in later-stage investments, where venture capitalist's value-added is not nearly as critical. This vertical integration is a threat to firms specializing in later-stage investments.

C. Buyers

In this context buyers are companies that require venture capital. These companies "buy" capital from venture capitalists in return for equity positions. Their relative power is measured by the amount of equity that must be traded for a given amount of capital, or the price of the deal. Companies can increase the price by reducing risk. Risk can be reduced by:

1. Having an experienced management team in place.
2. Having working prototypes of the product.
3. Performing detailed market research.

Satisfaction of the above items will tend to decrease the investment risk, and correspondingly, raise the price; conversely, increased risk tends to lower the price.

Another significant aspect of buyer bargaining power is the entrepreneur's known talents. A well known entrepreneur or team of engineers (the group of engineers who left Intel to form Sequent Computer Systems is a recent example) can demand an increase in valuation. Additionally, a well known entrepreneur or group will tend to have their financing oversubscribed. This oversubscription means there will be an excess of venture capital (excess demand by venture capitalists for the opportunity to invest) which could cause the price of the deal to rise.

D. Substitutes

The inherent riskiness and long-term orientation of early-stage investments precludes substitution of venture capital with more traditional financing means such as public markets or debt. Part of the difficulty of substitution is the value added the venture capitalist provides in a new venture. Particularly in early stages, venture capitalists play a critical role in insuring an emerging company's success⁴³.

⁴³ Armitage, C.F., The Role of the Venture Capitalist in New Ventures, M.I.T. Sloan School of Management, Master's Thesis, May, 1979, page 50.

Industrial corporations have recently increased their level of venture investment activity (see Chart 2.05) because of the attractive rates of return, access to emerging technologies (also referred to as "a window on technology"), and diversification potential that venture investments provide⁴⁴. Industrial corporations are increasing their direct venture investing activities through two avenues. Industrial corporations manage internal venture investment organizations, or supply a dedicated pool of capital to be managed by a professional venture capital firm⁴⁵. This may represent a threat to small, young firms specializing in technology niches.

E. Rivalry Among Firms

In general, venture firms compete for the opportunity to invest in deals. Firm specific characteristics such as reputation, network of contacts, past venture investment experience, additional areas of available services (e.g., consulting or investment banking), and technical expertise, serve as competitive weapons with which firms can differentiate themselves. Rivalry is also a function of deal price, alternative investment opportunities, and the relationship between firms competing for the deal. In some

⁴⁴ "Venture Capital: How Old Dogs Learn New Tricks," Business Week, November 2, 1987, page 86.

⁴⁵ "1988 Venture Industry Growth Brings Capital Pool To \$31 Billion," Venture Capital Journal, March, 1989, page 11.

deals, the lead venture capitalist will invite others to participate in a syndicate, with very little competition involved.

As more firms begin to compete, the time available to research a deal decreases; firms must act quickly if they wish to participate. This could cause the closing time for an investment to decrease. In addition, increased competition has caused firms to actively search for new deals rather than waiting for deals to appear. In this respect, partners with a large number of industry contacts have better leads to new ideas and potential entrepreneurs.

As more firms compete for deals and more capital becomes available, the venture capital industry will increasingly become more efficient, and lose more of its close fraternal style⁴⁶. Another indicator of competition would be a decrease in the rate of return down to a "floor rate," or rate that is earned in a "perfectly competitive industry"⁴⁷. There are many issues with respect to the measurement of interim rates of return in the venture industry, so it is difficult to measure current rates of return⁴⁸. Don Valentine, a very

⁴⁶ Bigler, page 44.

⁴⁷ Porter, page 5.

⁴⁸ "Venture Capital Performance," Venture Economics, Wellesley, MA, 1989.

successful venture capitalist, has publicly stated that past rates of return (in excess of 50%) cannot be repeated⁴⁹.

F. Measures Of Competition

This analysis highlights the fact that the venture capital industry is affected by several internal and external forces which lead to increasing competition. These forces are:

1. Increased supply of available venture capital. As indicated earlier, the supply of capital has increased over 1000% since 1978.
2. Increasing numbers of new venture firms being formed. New entrants into an industry leads to increased competition.
3. Increasing supplier power. Institutional investors control a critical component of the venture industry, and are bringing increasing pressure to bear on venture capital firms.
4. Increasing buyer bargaining power. Currently, there is the perception that "good" early-stage high technology investment opportunities are limited. Those "good"

⁴⁹ "A Case Of Too Much Money," Fortune, November 7, 1988, page 96.

opportunities can demand higher valuations. In addition, entrepreneurs are becoming much more sophisticated and can demand more from venture capitalists.

5. Increasing rivalry among firms. As the number of venture firms grows, rivalry within the industry will increase.

Some indicators of an increasing level of competition within the venture capital industry are:

1. Decreasing time for an average investment to close (from receipt of business plan to transfer of funds). As competition among firms increases, closing times could decline.
2. Increases in valuations. The rapid increase in the size of the venture capital pool creates pressure on firms to invest at an accelerated rate. In order to increase the investment pace, a firm may increase the valuation of a deal in order to pre-empt or gain control of an investment from other firms.
3. Oversubscribed investments. With a large supply of capital, there may be much more capital available to invest in a deal than is necessary. An increasing

number of oversubscribed investments would indicate an increase in competition.

4. Changes in investment strategies of venture firms. Such changes include: (1) investment outside the "typical" areas of venture capital, (2) an increase in seed/incubation investments, or (3) an increasingly proactive approach to locating and/or structuring deals.

5. A declining rate of return to an economic "floor" rate.

These are the issues that will be explored in the following sections.

IV. LITERATURE REVIEW

Picture the stereotypical image of a venture capital deal: an entrepreneur on his knees, begging for money, and a stodgy old millionaire shaking his head.

Now throw that picture out.

Imagine instead a venture capitalist in running shoes, racing around the country hunting down deals and battling with other financiers over the few companies worth backing, and you'll be closer to the truth⁵⁰.

The literature on competition within the venture capital industry is limited. Recently however, reports on the effects of the large increase in the venture capital pool have been published. This section summarizes the current literature available on the competitive environment within the venture capital industry. Areas which can indicate the degree of competition within the venture capital industry are:

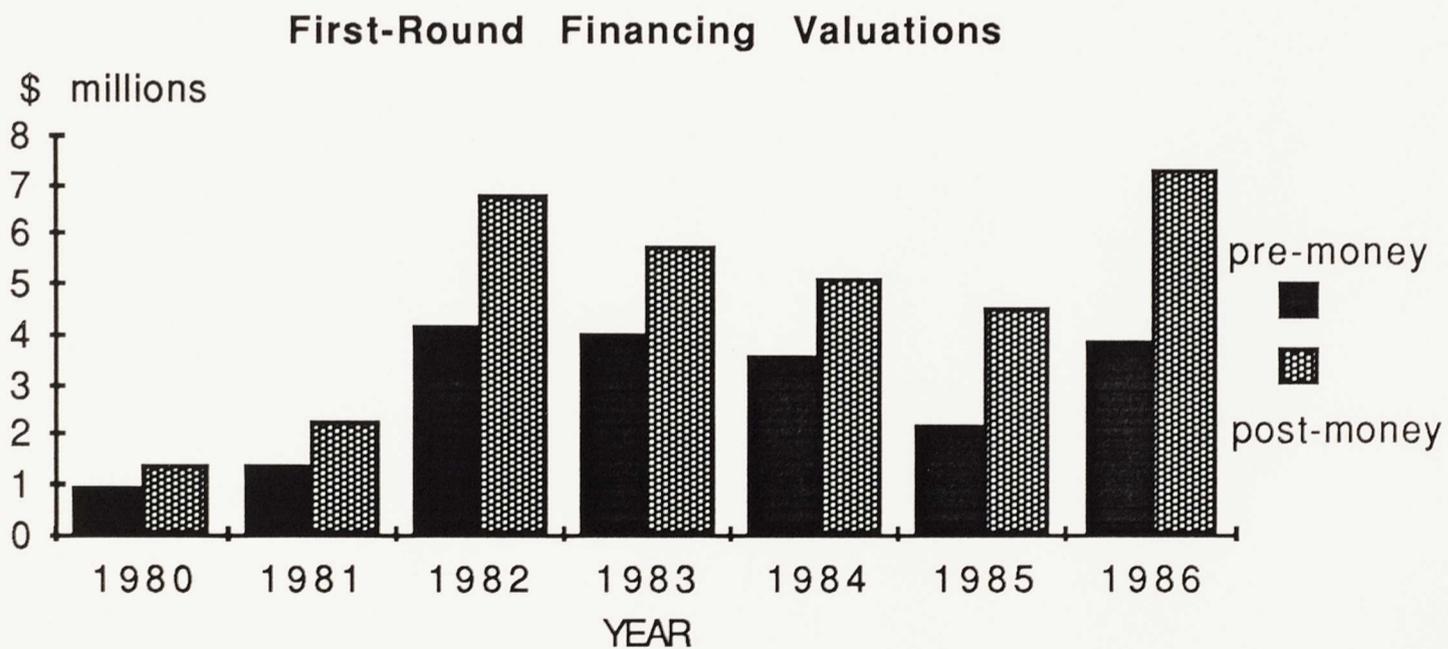
1. Investment valuations.
2. Investment closing times.
3. Investment subscription level and demand.
4. Investment strategies.
5. Rates of return.

⁵⁰ "Venture Capitalists Abandon Tradition In Fight For Startups," PC Week, August 8, 1988.

The following sections investigate each of these areas in detail.

A. Investment Valuations

Coopers & Lybrand recently completed a study on venture capital financing of 85 high technology companies between 1980-1986⁵¹. This study portrayed the market for venture capital like that of any other free market governed by the rules of supply and demand, and highlighted the cyclical nature of the venture capital industry during this decade⁵². In particular, the cyclical nature of pre-money and post-money valuations is illustrated in Charts 3.01 and 3.02.



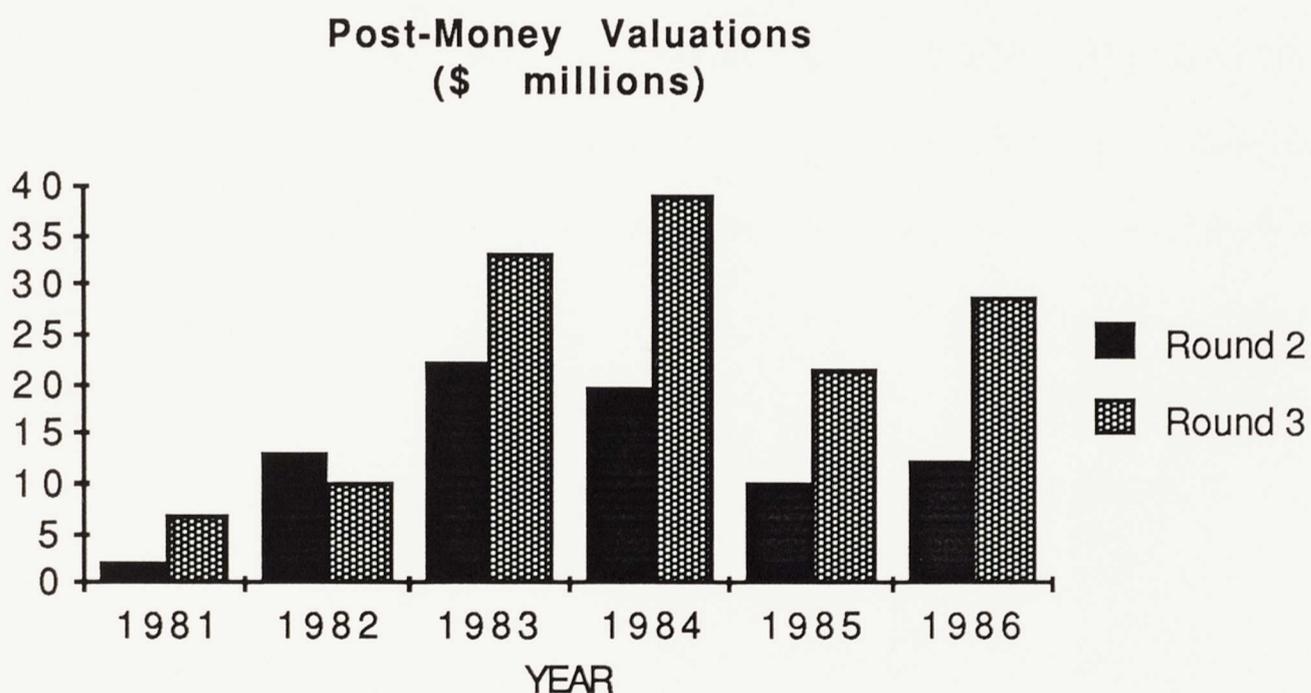
Source: Coopers & Lybrand

CHART 3.01

⁵¹ Coopers & Lybrand, Venture Capital: The Price Of Growth, (USA: 1986).

⁵² Ibid, page 16.

The upward trend during 1980-1982 was due to greatly increased activity in the venture capital industry, coupled with the rapid introduction and spread of the personal computer and microprocessor, and a very receptive IPO market in 1983 to technology oriented companies. As stated previously, this period of time was known as the "feeding frenzy," or "silly season." During this period, early-stage valuations were being driven up primarily because of investor optimism and the performance of the IPO market, rather than investor competitiveness⁵³.



Source: Coopers & Lybrand

CHART 3.02

⁵³ "Venture Funds Stop To Catch Their Breath," Venture, June, 1984, page 55.

Also contributing to this increase in valuations was the large influx of new professionals who were willing to accept these higher values when, perhaps, experienced venture capital professionals would have declined the investments⁵⁴. A correction occurred from 1983-1985 as speculative excesses wore off, and venture firms had to contend with many troubled portfolio companies.

Currently, many firms' investment criteria for high technology investments has become more selective⁵⁵, while at the same time, capital committed to the venture capital industry has remained at relatively high levels (see Chart 2.01). This increasingly selective criteria, coupled with a much more competitive, complex and changing high technology environment, has resulted in a shortage of "good" high technology deals to invest in^{56, 57, 58, 59}. This shortage of "good" deals, when combined with record levels of available

54 Ibid, page 55.

55 "Follow the Herd," Venture, February, 1987, page 26.

56 "Suddenly, A Good Startup Is Hard To Find," Business Week, December 12, 1988, page 37.

57 Follow The Heard," Venture, February, 1987, page 27.

58 "Venture Capitalists Abandon Tradition In Fight For Startups," PC Week, August 8, 1988.

59 "A Case Of Too Much Money," Fortune, November 7, 1988, page 96.

venture capital and venture professionals has contributed to a more competitive environment.

In addition, when a particular high-technology area does prove promising, the venture capital industry now has the capability to finance a greater number of startup companies⁶⁰. This situation has resulted in cutthroat competition in specific industry sectors, and corresponding higher risks, and lower returns to the venture capitalists⁶¹. For example, Convex Computer, a successful venture backed startup which competes in the highly competitive mini-supercomputer industry, returned only three times the original investment to the venture capitalists⁶². Given the risks involved, the investment should have ultimately returned more to the venture capitalists⁶³. Richard Shaffer, publisher of the Technologic Computer Letter, thinks that the mini-supercomputer industry, like the Winchester Disk Drive industry, also suffers from "overpopulation," although not to the levels of the disk drive industry⁶⁴.

60 "From Tend To Trend - Observations Of A Pendulum," Venture Capital Journal, May, 1986, p. 8.

61 "From Trend to Trend - Observations of a Pendulum," Venture Capital Journal, May, 1986, page 8.

62 "A Case Of Too Much Money," Fortune, November 7, 1988, page 96.

63 Ibid, page 96.

64 "Follow The Heard," Venture, February, 1987, page 28.

Although rising valuations reflect many factors, it is clear that the speculative excesses present during 1980-1982 currently are not a contributing factor. The rise in valuations since 1986 can, in part, be attributed to increasing competition within the venture capital industry. A recent example is Actel Corp., a Silicon Valley startup company which was valued at \$35 million, prior to delivery of its first product⁶⁵. Valuations such as this have lead to the perception that current investments are priced much higher than in the past⁶⁶.

Some additional sources for this competition are industrial corporations and Japanese investors who are now bidding against venture capital firms⁶⁷. Industrial corporations are interested in access to technology, while the Japanese can leverage off their manufacturing knowledge and access to new markets⁶⁸. These types of investors can derive additional value from technology based companies, and therefore justify higher investment valuations. In a recent case, a deal to finance Poquet Computer by venture capitalists was outbid by

65 "Suddenly, A Good Startup Is Hard To Find," Business Week, December 12, 1988, p. 37.

66 Ibid, p. 37.

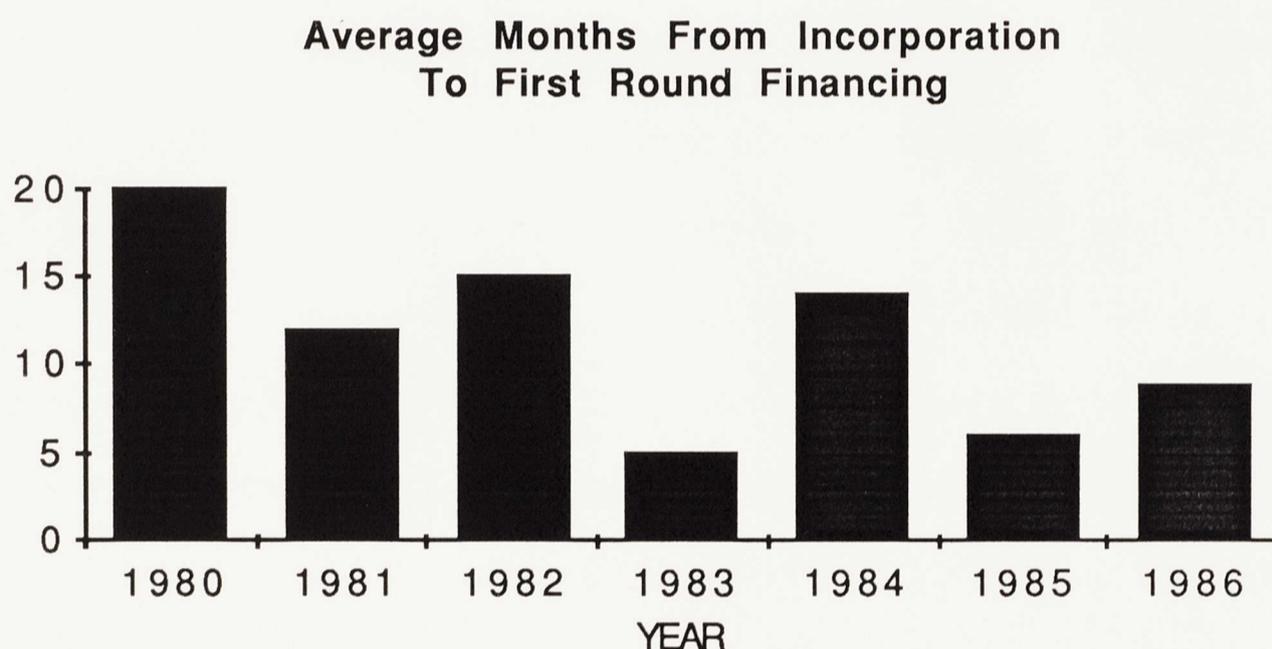
67 "A Case Of Too Much Money," Fortune, November 7, 1988, page 104.

68 Ibid, page 104.

a Japanese electronics manufacturer that tripled the original valuation⁶⁹.

B. Investment Closing Times

The Coopers & Lybrand study also compiled data on the average number of months from company incorporation to first-round financing. This data is shown in Chart 3.03.



Source: Coopers & Lybrand

CHART 3.03

During 1983, the average time to complete a first round financing fell to a low of 5 months. This year also corresponds to the most active period in the the venture capital industry. Decreasing closing times during this

⁶⁹ "Suddenly, A Good Startup Is Hard To Find," Business Week, December 12, 1988, p. 37.

period probably can be attributed to speculative excesses, rather than increasing competition. In addition, the growth of inexperienced venture capitalists, who may not have completed the appropriate level of due diligence, could have also contributed to this condition⁷⁰.

C. Investment Subscription Level

Another potential indicator of oversubscribed investments could be the increasing spread between pre-money and post-money valuations. The increasing spread between pre-money and post-money values indicates that more capital is being invested during a financing. From 1982-1984, the differential between pre-money and post-money values decreased from \$2.4 million to \$1.5 million (see Chart 3.01). In 1985, the difference rose to \$2.3 million, and in 1986 the difference was \$3.4 million.

It must be noted that there are several factors contributing to this increasing spread:

1. Inflation.

⁷⁰ "Venture Capital: The Price Of Growth," (Coopers & Lybrand: Boston, MA, 1989), p. 19.

2. Increasing levels of required capitalization. Simply put, it costs more to start and operate a company.
3. Increased availability of venture capital. With more capital available, venture capitalists may be more willing (or feel more pressure) to invest larger sums of money in each investment.
4. Increasing competition within many high technology market segments forces the use of more capital in order to successfully compete in these segments.

Several venture capitalists in a recent panel discussion noted that in some instances, there is more capital available than necessary for the investment in order to accommodate the needs of the syndicate⁷¹. At other times, venture capitalists rush to get into deals lead by experienced firms, a situation which also results in oversubscription. Many responses to the survey indicated that "there are too many followers and not enough leaders."

Another indicator of oversubscription is the number of potential co-investors which were unable to invest in a

⁷¹ "Highlights of Venture Forum '88," Venture Capital Journal, November, 1988, page 9.

particular deal. No recent literature has directly addressed this topic, but it is covered in Section V.

D. Investment Strategy

During the developmental period of the venture capital industry, most venture firms followed a generalist strategy. It has only been recently that specialization, and clearly articulated investment strategies have become necessary to differentiate the firm and attract limited partners and entrepreneurs⁷².

As part of an investment strategy, many firms began to diversify into "non-classical" venture investment areas such as health care and retailing. Last year, venture investments in consumer oriented businesses (15% of the total capital invested in 1987) were greater than the investments in computer manufacturers (14%)⁷³. Diversification into consumer and retail oriented ventures is less risky and, some would say, more in line with the returns currently being realized by venture capital⁷⁴.

⁷² "Venture Funds Stop To Catch Their Breath," Venture, June, 1984, page 58.

⁷³ "A Case Of Too Much Money," Fortune, November 7, 1988, page 100.

⁷⁴ Ibid, page 96.

Diversification has also taken place into later-stage and buy-out opportunities⁷⁵. Because of the increased difficulty in successfully completing early-stage high technology investments, many firms have increased their later-stage and buy-out investments. It is expected that competition in later-stage transactions will be the fiercest because of the limited number of available opportunities and the relative attractiveness of these investments (less time required to research the investment, less operational and technical risk associated with the investment, and more capital can be invested)^{76, 77, 78}. Some say that as a result of the high interest in later stage investments, competition for early stage investments may decrease in the near term⁷⁹.

In addition, one may expect seed/incubation investments to increase for 2 major reasons: (1) lower valuations allow the potential for higher returns, and (2) these investments serve as a pipeline for early-stage investments in which the firm has greater control.

75 "Special Report - Venture Forum '87," Venture Capital Journal, November, 1987, p. 11.

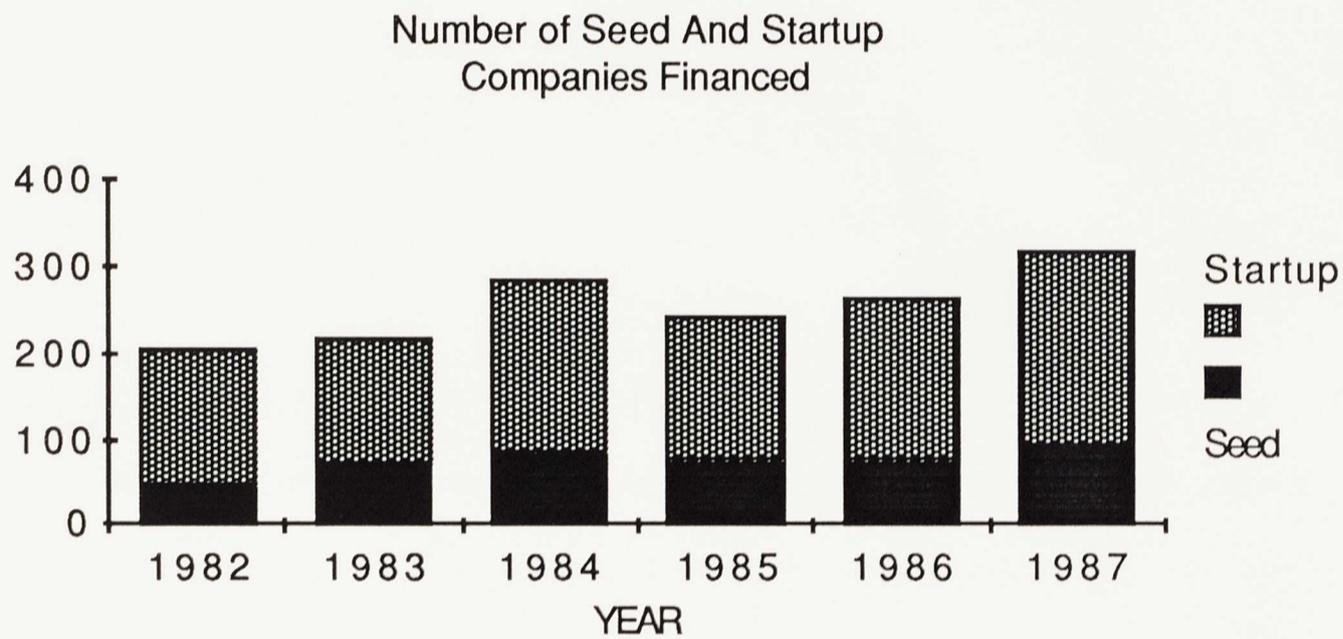
76 "Where Venture Capital Is Investing Now," High Technology Business, March, 1988, page 25.

77 Cash Pours Into Venture-Capital Funds, But Investors are Increasingly Selective," Wall Street Journal,

78 "Venture Capitalists Abandon Tradition In Fight For Startups," PC Week, August 8, 1988.

79 Ibid, page

Investments in seed and startup companies by venture capital firms have increased (both in number of companies financed and capital resources devoted) in the 1980s⁸⁰. Charts 3.04 and 3.05 show the number of seed and start-up companies financed and total capital invested from 1982-1987.

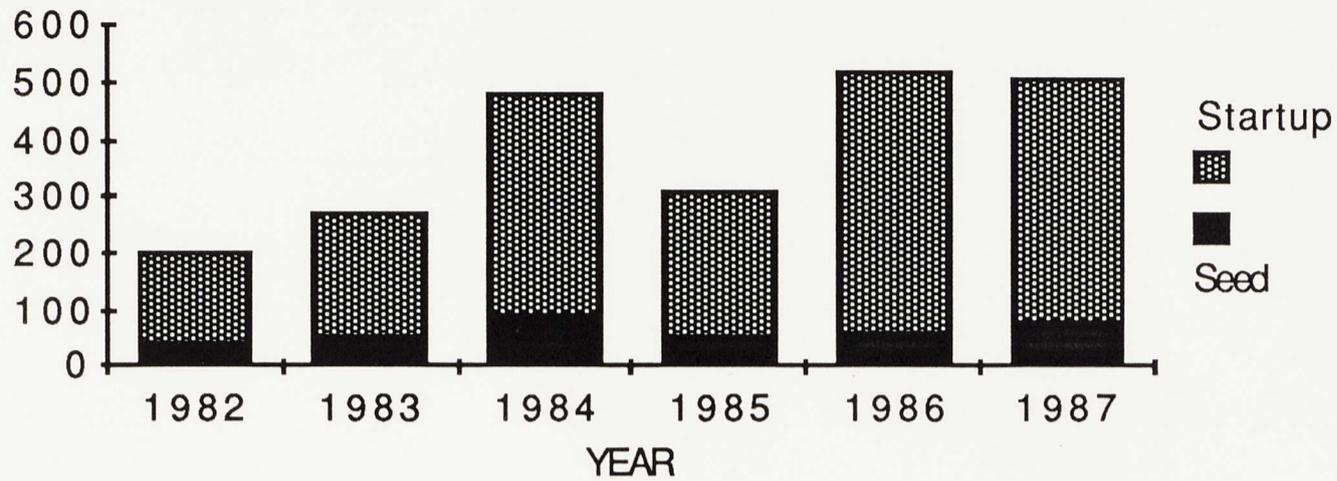


Source: Venture Capital Journal, January, 1989, page 2.

CHART 3.04

⁸⁰ "Observations & Insights," Venture Capital Journal, January, 1989, page 1.

Seed And Startup Financing
Dollars Invested (millions)



Source: Venture Capital Journal, January 1989, page 2.

CHART 3.05

E. Investment Rate of Return

One of the direct results of increasing competition within an industry is a decreasing rate of return down to an economic "floor" rate⁸¹. Although much debate exists about the usefulness and accuracy of measuring interim rates of return for venture funds⁸², it has been acknowledged that previously high rates of return that the industry enjoyed cannot be repeated⁸³. One irresponsible reporter for The Wall Street Journal recently published a report stating that recent returns were negative in the venture capital industry, in

81 Porter, page 5.

82 "Special Report - Venture Capital Performance," Venture Capital Journal, December, 1988, page 10.

83 "A Case Of Too Much Money," Fortune, November 7, 1988, page 96.

part due to the competition among venture firms⁸⁴. The sensationalism of this article was based on interim rates of return for very young funds, and it is well known that these interim rates of return are often poor predictors of future returns⁸⁵.

Although many outside observers of the venture capital industry feel that the market is becoming more efficient, Stanley Pratt feels that the venture capital market still remains very inefficient⁸⁶. There will always be big winners in inefficient markets, and Pratt believes that his portfolio will be one of the better performers⁸⁷. The attitude among venture capitalists that "the average returns in the venture industry are going down, but my fund's returns will outperform the average," has been confirmed by William Sahlman and Howard Stevenson of the Harvard Business School. During a recent conference of venture capitalists, the average anticipated rate of return over the next five to ten years was expected to be 23%, while the predicted average

84 "Recent Venture Funds Perform Poorly As Unrealistic Expectations Wear Off," Wall Street Journal, November 8, 1988.

85 "Observations & Insights," Venture Capital Journal, November, 1988, page 1.

86 "Venture Capital After The Fall," Inc., December, 1987, p. 188.

87 Ibid, p. 188.

returns for the entire venture capital industry were forecast to be 15.7%.

The rate of return is a function of deal valuation when the investment is made, the exit price at liquidation, and the holding time of the investment. Kevin Landry, managing partner of TA Associates, sees a squeeze on returns because deal valuations are high, and exit valuations are low⁸⁸. IPOs are generally the exit strategy of choice since these lead to higher realized returns by the investors⁸⁹. The current IPO market has been generally unreceptive to all but the best issues, so venture firms must either liquidate through other means (primarily acquisition), or wait until the IPO market is more receptive to new issues. In either case, the result is a decrease in returns.

Higher entry valuations are due in part to competition between venture capitalists and other investors. As competition between firms does increase, some expect returns to be increasingly bimodal - either very good or very bad⁹⁰.

88 "Suddenly, A Good Startup Is Hard To Find," Business Week, December 12, 1988, p. 37.

89 "Exiting: New Patterns In The 1980s," Venture Capital Journal, August, 1988, p. 13.

90 "A Case Of Too Much Money," Fortune, November 7, 1988, page 104.

V. RESPONSES TO SURVEY

A. Description Of Survey

A five page survey was distributed to 34 venture capitalists, and is contained in Appendix A. The survey was divided into 3 major sections. The first section gathered information on the background of the responding firms and their early-stage, high technology investment activity.

Section II of the survey was designed to gather information about each firm's recent early-stage, high technology investment experiences. This section contained 20 questions, and explored firms' experiences with overcommitted investments, pre-money valuations, financing sizes, and closing times. These are areas that could indicate the relative level of competitiveness within the venture capital industry. These questions attempted to assess the relative frequency at which certain events (over-committed investments, increased pre-money valuations, and increased financing sizes) have occurred in the past, and are projected to occur in the future.

Section III of the survey investigated each firm's current early stage investment policy, and any changes that have been made to this policy over the life of the firm.

B. Results of Survey

A complete summary of the survey responses is contained in Appendix B. Each section below summarizes these responses and discusses the results as they apply to the competitive environment in the venture capital industry.

1. Section I - Background Information

Twenty five responses to the survey were received, from 16 firms on the east coast, and 9 firms on the west coast. Of the 9 firms that did not respond, 4 are located on the east coast, 2 in the midwest, and 3 on the west coast. From data reported in Pratt's Guide To Venture Capital Sources, the mean size of the funds managed by the non-responding firms is \$164 million, and the mean age of these firms is 12.1 years. There does not appear to be any systematic bias between firms that responded to the survey, and those that did not.

Respondents were primarily from firms with lengthy tenures within the venture capital industry; however, many of the individual respondents have joined the firms within the last 5 years. A summary of the background statistics are shown in Chart 5.01.

<u>Number</u>	<u>QUESTION</u>	<u>RESPONSES</u>	<u>MEAN</u>	<u>MEDIAN</u>	<u>S.DEV</u>	<u>HIGH</u>	<u>LOW</u>
2	Experience of Respondent (years)	25	6.88	4	8.96	43	1
3	Age Of Firm (years)	25	15.08	13	11.36	45	4
4	Size Of Funds Used For Active Investments (\$ MM)	22	138	90	122	400	14
5	Number of Funds	24	2.58	3	1.28	6	1
6	Proportion of current funds for high tech	25	59.5%	62.5%	26%	88%	13%
6(a)	High tech investment activity increased in last 5 years	25	12/yes	13/no			

CHART 5.01

Discussion

The proportion of the current active funds allocated to early-stage high technology investments had a mean of 59.5%. Overall, about \$82 million per responding firm is being actively invested in early-stage high technology companies.

About half of the respondents indicated that early stage investment activities are increasing at their respective firms. Eight of the firms currently investing greater than 50% of their funds in early-stage high-technology deals were not increasing their activities in this area, while 6 indicated they were. Five firms with less than 50% of their funds targeted for this area indicated that this activity had

increased within the last 5 years, while six firms indicated that this activity had not increased.

Firms that historically have been very active in the high technology area have not increased their activity in the last five years. In addition, over half of the firms with a less than 50% of their funds allocated for early-stage, high technology investments have not increased their activity in this area recently. This may indicate that these less technologically active firms are now focusing in other areas such as later stage investments, and investments outside the technology sector. This confirms the trend toward investment diversification discussed in Section IV.

2. Section II - Investment Experiences

The first set of questions in section II of the survey gathered information concerning firms' previous experiences with overcommitted investments. Overcommitted investments are instances where there were more firms and capital prepared to make a particular investment than required. A summary of the responses is shown in Chart 5.02.

<u>Question</u>		<u>Responses</u>				
1	Investor in overcommitted Investment	25	21/yes	4/no		
		<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>	<u>HIGH</u> <u>LOW</u>
1(a)	# Co-investors which participated	23	2.43	1.53	3	6 0
1(b)	# Co-investors unable to invest	23	2.22	1.83	2	6 0
	Reasons for turning away co-investors					
1(c)	a No Comp. Skills	10				
1(c)	b Oversubscribed	19				
1(c)	c Poor past experience	2				
1(c)	d Have not worked with previously	3				
1(c)	e Other	1				
2(a)	Frequency of overcommitted investments in last decade	23	11/increase	6/same	6/decrease	

<u>Number</u>	<u>Question</u>	<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>	<u>HIGH</u>	<u>LOW</u>
	Why was investment oversubscribed ?						
2(b)-a	Target high growth market	18	2.11	1.08	2	1	4
2(b)-b	Previously successful management team	20	1.65	1.09	1	1	5
2(b)-c	Reasonable valuation	17	3.12	1.27	3	1	5
2(b)-d	Other	11	1.36	0.67	1	1	3

CHART 5.02

Discussion

The majority of the respondent firms (84%) have experienced a situation within the last 24 months in which an investment was overcommitted. In these situations, an average of 2.43 firms co-invested, and 2.22 firms were unable to invest. The primary reasons for turning away co-investors are: (1) the investment could not sustain another investor, and (2) the firm could not bring any complimentary skills to the investment. 74% of the responding firms reported that these situations have remained the same or increased in occurrence over the last 10 years.

The major causes for oversubscribed investments were listed as: (1) the entrepreneurs have been successful in the past, and (2) the company is targeting a high growth market. In a number of responses, reasonable valuation was given low marks (e.g., a ranking of 4 or 5) as a reason for an investment to be oversubscribed.

The next set of questions concerned pre-money valuations and the firm's experience in situations where pre-money valuations have been bid up by a competing investor. A summary of the responses is shown in Chart 5.03.

<u>Question</u>		<u>Responses</u>				
3(a)	Within last 2 years involved in situation where pre-money value bid up	25	18/yes	7/no		
		<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>		
3(b)	Firms reporting cases of bidding	17	2.43	1.53		
		<u># Resp.</u>	<u>DROP</u>	<u>NO MATCH</u>	<u>MATCH</u>	<u>INC</u>
3(b)	# reported cases of bidding	43	17	16	8	2
3(c)	Situation frequency over the last 10 years	23	12/inc	6/same	5/dec	
		<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>	<u>HIGH</u> <u>LOW</u>
3(d)	Estimated pre-money value increase	17	22.9%	12.6%	22.5%	52.5% 7.5%
3(e)	Frequency of bidding going forward	23	6/inc	12/same	5/dec	
3(f)	what firm caused this					
	a similar firm to mine	7				
	b smaller firm than mine	7				
	c larger firm than mine	4				
	d corporate investors	3				
	e other private	1				
	f specialized firm	1				
	g other	0				

CHART 5.03

Discussion

The results reveal that 72% of the responding firms had experienced a mean of 2.4 cases in the last 2 years in which their pre-money valuation had been bid up by another investor. 43 cases were reported by 17 responding firms, and in the majority of the cases (77%) the firms either dropped

out, or did not match the competing investor's bid. Only in 5% of the cases did the firm increase its valuation beyond the competing bid, while in 18% of the reported cases the firm increased the valuation to match the competing bid.

Over the last 10 years, 78% of the responding firms reported that these situations have remained the same or increased in occurrence. The mean value of the reported increase in pre-money valuations was 23%, with a standard deviation of 13%. The type of investors contributing to the pre-money valuation increase were primarily thought to be similar firms to that of the respondents, or smaller, lesser known firms. To a lesser extent, larger firms and corporate investors were thought to have contributed to the increase. Only 1 respondent thought that a specialty firm had contributed to the increase. In no cases were Japanese investors reported to be contributing to the increase.

About half of the respondents (52%) felt that the frequency of occurrence would remain the same, while 26% think the frequency will increase, and the remainder (22%) feel these situations will decrease.

Question 4 of section II concerns financing sizes for early-stage, technology oriented investments. The results of this question are shown in Chart 5.04.

<u>QUESTION</u>	<u># RESPONSES</u>		
4(a) Financing increase to accommodate another firm	25	23/yes	2/no
4(b) How did you respond to the increase	23	23/remain in	
4(c) Have these situations inc, dec, or stay same in last 10 years	24	15/inc	7/same 2/dec
4(d) In future, will these cases inc, dec, or stay same	23	9/inc	11/same 3/dec
4(f) what firm caused this			
a similar firm	11		
b smaller firm	5		
c larger firm	2		
d corporate	4		
e other private	1		
f specialized firm	3		
g other	0		

CHART 5.04

Discussion

The majority of the respondents (92%) reported that within the last 2 years they had been involved in a financing that had increased in size in order to accommodate additional investors. In all cases, the respondents remained in the investment after it had been expanded. Over the last 10 years, the majority of the respondents felt that these experiences had increased or remained the same. Going forward, the majority of the respondents (47%) feel that these experiences will remain the same, while 35% of the respondents feel these situations will increase. Primarily, firms similar to the respondents were the cause for the expansion. To a lesser extent, corporate investors and specialty firms were accommodated in an expansion.

Particularly interesting is the fact that all the responding firms remained in the investment after the financing had been expanded. This may indicate that firms are probably accommodating other firms with which they have had previous investment relationships. This illustrates that relationships are still very important in investment syndications. Specialty firms are probably accommodated since they presumably bring additional value to the investment beyond capital.

The final question of this section concerned closing times of investments. These questions explored the length of closing times over 4 time periods, and asked the respondents to compare closing times over the past 10 years. A summary of the results is contained in Chart 5.05

<u>QUESTION</u>		<u># RESPONSES</u>					
5	Closing times over the last 10 years: inc, dec, or stay same	23	10/inc	9/same	4/dec		
	Average time to close (months)						
5(a)	<u>Time period</u>	<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>	<u>HIGH</u>	<u>LOW</u>
	1970-1974	10	3.7	2.3	3	9	1
	1975-1979	16	3.5	1.4	3	6	2
	1980-1984	20	2.9	1.3	3	6	1
	1985-present	21	4.3	1.8	4	8	2

CHART 5.05

Discussion

The majority of the respondents felt that closing times had remained the same or increased over the last 10 years. I had hypothesized that closing times would decrease in times of increased competition. Several respondents commented that the good deals close very quickly. Mean reported closing times have decreased since 1970, and the lowest average closing time was reported in the 1980-1984 period. This corresponds to the period of very high activity within the venture capital industry.

Currently, the respondents indicated that closing times have increased, with a reported mean of 4.3 months. The marginal investments that were closing quickly in the 1980-1984 period are probably taking much longer to close now. Also, there is a feeling that the technology is getting more complex, and thus it may take longer to complete the due diligence necessary to close an investment.

It appears that closing times are related to overall venture capital industry activity, and cannot be directly attributed to competition between venture firms. One exception to this is for "good" deals - the rare deals which combine a complete and previously successful management team targeting a very large and growing market with a product or service that has sustainable competitive advantage. In these cases, closing times will decrease, partly due to the decrease in time

required for due diligence, and in part due to the pressure to secure the deal from other venture firms.

Shorter closing times are one facet of venture firms competing harder to invest in quality deals. During my interviews, many venture capitalists commented on the bimodality of closing times - the good deals close fast, and the others seem to be around for a long time.

3. Section III - Investment Policy

The final section of the survey covered early stage investment policy, and changes that have occurred to this policy over the life of the firm. A summary of the responses is contained in Chart 5.06.

<u>Number</u>	<u>QUESTION</u>	<u># RESPONSES</u>					
1	Current fund have min investment size	25	13/yes	12/no			
		<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>	<u>HIGH</u>	<u>LOW</u>
1(a)	Minimum Size (\$000)	11	736	408	500	1500	100
1(b)	Does size vary if lead investor	22	11/yes	11/no			
2	Min size changed over life of your firm	22	16/yes	6/no			
2(a)	If yes, has the size increased or decreased	16	12/inc	4/dec			
3	Firm prefer to be the sole investor in early stage investments						
	(a) in the past	23	4/yes	19/no			
	(b) currently	23	7/yes	16/no			
	(c) in the future	21	6/yes	15/no			
4	Does firm provide seed or incubation investments	25	23/yes	2/no			
4(a)	Incubation investments inc, dec, or same	25	11/inc	9/same	5/dec		
4(b)	Reasons for participating in seed/incubation investments						
		<u>RESPONSES</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>		
	a Higher ROR	16	1.58	0.79	1		
	b Ties to science/univ.	13	2.73	1.19	2		
	c Generate quality deals	20	1.63	0.89	1		

CHART 5.06

Approximately half the responding firms reported a minimum investment size for early stage technology oriented

investments. The mean reported minimum size was \$736 thousand, with a standard deviation of \$408 thousand. The majority of the respondents also reported that the minimum size does vary if they are a lead or non-lead investor, and that over the life of the firm, the minimum investment size has increased.

Most firms have not been the sole investors in early-stage technology oriented investments in the past, and do not expect to be in the future. This is consistent with data from an early portion of this survey, in which an average of 2.43 co-investors was reported.

A majority of the respondents also indicated that they seed/incubate investments, and expect this type of investing to remain the same or increase in frequency going forward. The major reasons for participating in this type of investment were to generate a pipeline of high quality, early-stage investments, and to achieve a higher rate of return.

VI . CONCLUSION

The early successes and high returns generated by the venture capital industry in its formative stages have not gone unnoticed. Today, there are record numbers of professionals and capital actively pursuing venture investments. The internal and external forces acting on the industry have contributed to an increasingly competitive environment. Competition is present for all stages of investments, but there is a perception by some that competition for later-stage investments is the most intense.

The venture capital industry is cyclic. During the boom of 1980-1983, the high rates of return realized by investments made during the mid to late 1970s became known. These successes began to attract larger amounts of capital and professionals. These increases have lead to a corresponding decline in returns. There is a sense that another correction will occur in which less capital will be committed to the industry as lower returns begin to be realized. Eventually, the cycle will reverse itself. The returns from many investments made in the last three years will not become known for several more years. There is the feeling though, that most venture firms will realize either very good returns, or very poor returns. Those with the poor returns will exit from the industry.

The following areas were studied to measure the competitive intensity within the venture capital industry:

1. Investment valuations.
2. Investment closing times.
3. Investment subscription level and demand.
4. Investment strategies.
5. Rates of return.

This study indicated that the competitive intensity within the venture capital industry is increasing. It should be noted that other factors such as the specific industry a company is targeting, the intensity of competition in that industry, the quality of the management team, and the general economic conditions can also affect the areas identified above.

It would be interesting in the future to study both the limited partners' and entrepreneurs' view of competition in the venture capital industry.

(b) Number of co-investors unable to invest. 1 2 3 4 5 more

(c) Reasons for turning away co-investors.

- (a) No complementary skills.
- (b) Oversubscribed investment.
- (c) Poor past experience with potential co-investor.
- (d) Have not worked with potential co-investor before.
- (e) Other (please explain)

2. These questions are focusing on your experiences with early stage, technology oriented investments completed **within the last 10 years** which were overcommitted.

(a) Do you feel that the frequency of overcommitted early stage investments has increased, decreased, or remained the same?

INCREASED REMAINED THE SAME DECREASED

(b) Please rank (1=high, 5=low) the reasons why investments are overcommitted.

- Investment opportunity is targeting a high growth industry.
- Entrepreneurs have been successful in the past.
- The valuation is reasonable.
- Other (please explain).

3. These questions are focusing on your experiences with **pre-money valuations** for early-stage, technology oriented investments.

(a) Within the last 2 years, has your firm experienced a situation in which your pre-money valuation was bid up by another venture capital firm?

YES NO

(b) If yes, how did your firm modify its offer?

Case 1:	DROPPED OUT	DID NOT MODIFY	MATCHED	INCREASED
Case 2:	DROPPED OUT	DID NOT MODIFY	MATCHED	INCREASED
Case 3:	DROPPED OUT	DID NOT MODIFY	MATCHED	INCREASED
Case 4:	DROPPED OUT	DID NOT MODIFY	MATCHED	INCREASED

(c) Do you feel that these situations have increased, decreased, or remained the same over the last 10 years?

INCREASED REMAINED THE SAME DECREASED

(d) Can you estimate, in percentage terms, what has been the average increase in the pre-money valuation?

0-15% 15-30% 30-45% 45-60% 60-75% >75%

(e) Looking forward, do you feel that these experiences will increase, decrease, or remain the same.

INCREASE REMAIN THE SAME DECREASE

(f) If possible, can you identify what type of firm caused this situation?

- (a) A firm similar to mine (size, tenure in the venture industry)
- (b) A smaller, lesser known firm.
- (c) A larger, better known firm.
- (d) Corporate investors.
- (e) Other private investors.
- (f) A firm which specializes in this particular area.
- (g) Other (please comment)

4. These questions are focusing on your experiences with **financing sizes** for early-stage, technology oriented investments.

(a) Within the last 2 years, has your firm experienced a situation in which the size of a financing was increased to accommodate another venture capital firm?

YES NO

(b) If yes, how did your firm react?

DROPPED OUT
REMAINED IN
OTHER (please explain)

(c) Do you feel that these situations have increased, decreased, or remained the same over the last 10 years?

INCREASED REMAINED THE SAME DECREASED

(d) Looking forward, do you feel that these experiences will increase, decrease, or remain the same.

INCREASE REMAIN THE SAME DECREASE

- (f) If possible, can you identify what type of firm contributed to the increase?
- (a) A firm similar to mine (size, tenure in venture industry)
 - (b) A smaller, lesser known firm.
 - (c) A larger, better known firm.
 - (d) Corporate investors.
 - (e) Other private investors.
 - (f) A firm which specializes in this particular area.
 - (g) Other (please explain)

5. In your experiences over the last 10 years with early stage, technology oriented investments, have investments taken shorter, longer, or the same amount of time to close (from receipt of business plan until the transfer of funds).

SHORTER SAME AMOUNT LONGER

(a) Please compare the average closing times (as defined above) of early stage investments.

<u>TIME PERIOD</u>	<u>AVGERAGE TIME TO CLOSE (months)</u>									
1970-1974	1	2	3	4	5	6	7	8	9	10
1975-1979	1	2	3	4	5	6	7	8	9	10
1980-1984	1	2	3	4	5	6	7	8	9	10
1985-present	1	2	3	4	5	6	7	8	9	10

III. INVESTMENT POLICY

It would be helpful for my study to identify whether firms have made changes in investment policies for early-stage, technology oriented investments in response to the changes occurring within the venture capital industry.

1. Does your CURRENT fund have a minimum investment size for early-stage, technology oriented investments?

YES NO

(a) If yes, what is the size of the minimum investment? _____

(b) Does this minimum size vary if you are a lead or non-lead investor? YES NO

2. Has the minimum investment size changed over the life of your firm? YES NO

(a) If yes, has the size increased or decreased? INCREASE DECREASE

3. Has (or will) your firm typically preferred to be the **sole investor** in an early stage financing?

(a) In the past.	YES	NO
(b) Currently.	YES	NO
(c) In the future.	YES	NO

4. Does your firm provide seed financing or incubate potential investments? YES NO

(a) Has the number of seed investments increased, decreased, or remained constant in the last five years?

 INCREASE DECREASE REMAIN THE SAME

(b) Reasons for participating in seed/incubation investments (if possible, please rank)

- a. Historically higher rate of return.
- b. Strong ties to university/scientific community.
- c. Lead to generation of quality early stage investments.
- d. Other (please explain).

IV. OTHER

Please add any comments or observations you may have.

THANK YOU FOR YOUR PARTICIPATION.

As mentioned in the cover letter, your responses will be held in confidence and only reported in aggregate form. If you would like a copy of my thesis, or a summary of the results of this survey, please indicate below.

_____ Please send me a summary of the responses to the survey (available approximately May 15).

_____ Please send me a copy of your Sloan (MIT) Master's Thesis analyzing this information (available approximately June 15).

APPENDIX B

SUMMARY OF RESPONSES TO SURVEY

SECTION I - BACKGROUND

Number	QUESTION	RESPONSES	MEAN	MEDIAN	S.DEV	HIGH	LOW
2	Experience of Respondent (years)	25	6.88	4	8.96	43	1
3	Age Of Firm (years)	25	15.08	13	11.36	45	4
4	Size Of Funds Used For Active Investments (\$ MM)	22	138	90	122	400	14
5	Number of Funds	24	2.58	3	1.28	6	1
6	Proportion of current funds for high tech	25	59.5%	62.5%	26%	88%	13%
6(a)	High tech investment activity increased in last 5 years	25	12/yes	13/no			

SECTION II - INVESTMENT EXPERIENCES

<u>Question</u>		<u>Responses</u>					
1	Investor in overcommitted Investment	25		21/yes		4/no	
		<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>	<u>HIGH</u>	<u>LOW</u>
1(a)	# Co-investors which participated	23	2.43	1.53	3	6	0
1(b)	# Co-investors unable to invest	23	2.22	1.83	2	6	0
	Reasons for turning away co-investors						
1(c)	a No Comp. Skills	10					
1(c)	b Oversubscribed	19					
1(c)	c Poor past experience	2					
1(c)	d Have not worked with previously	3					
1(c)	e Other	1					

2(a) Frequency of overcommitted investments in last decade
 23 11/increase 6/same 6/decrease

<u>Number</u>	<u>Question</u>	<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>	<u>HIGH</u>	<u>LOW</u>
	Why was investment oversubscribed ?						
2(b)-a	Target high growth market	18	2.11	1.08	2	1	4
2(b)-b	Previously successful management team	20	1.65	1.09	1	1	5
2(b)-c	Reasonable valuation	17	3.12	1.27	3	1	5
2(b)-d	Other	11	1.36	0.67	1	1	3

	<u>Question</u>		<u>Responses</u>				
3(a)	Within last 2 years involved in situation where pre-money value bid up		25	18/yes	7/no		
		<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>			
3(b)	Firms reporting cases of bidding	17	2.43	1.53			
		<u># Resp.</u>	<u>DROP</u>	<u>NO MATCH</u>	<u>MATCH</u>	<u>INC</u>	
3(b)	# reported cases of bidding	43	17	16	8	2	
3(c)	Situation frequency over the last 10 years	23	12/inc	6/same	5/dec		
		<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>	<u>HIGH</u>	<u>LOW</u>
3(d)	Estimated pre-money value increase	17	22.9%	12.6%	22.5%	52.5%	7.5%
3(e)	Frequency of bidding going forward	23	6/inc	12/same	5/dec		
3(f)	what firm caused this						
	a similar firm to mine	7					
	b smaller firm than mine	7					
	c larger firm than mine	4					
	d corporate investors	3					
	e other private	1					

f	specialized firm	1
g	other	0

	<u>QUESTION</u>	<u># RESPONSES</u>			
4(a)	Financing increase to accommodate another firm	25	23/yes	2/no	
4(b)	How did you respond to the increase	23	23/remain in		
4(c)	Have these situations inc, dec, or stay same in last 10 years	24	15/inc	7/same	2/dec
4(d)	In future, will these cases inc, dec, or stay same	23	9/inc	11/same	3/dec
4(f)	what firm caused this				
	a similar firm	11			
	b smaller firm	5			
	c larger firm	2			
	d corporate	4			
	e other private	1			
	f specialized firm	3			
	g other	0			

	<u>QUESTION</u>	<u># RESPONSES</u>					
5	Closing times over the last 10 years: inc, dec, or stay same	23	10/inc	9/same	4/dec		
	Average time to close (months)						
5(a)	Time period	<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>	<u>HIGH</u>	<u>LOW</u>
	1970-1974	10	3.7	2.3	3	9	1
	1975-1979	16	3.5	1.4	3	6	2
	1980-1984	20	2.9	1.3	3	6	1
	1985-present	21	4.3	1.8	4	8	2

SECTION III - INVESTMENT POLICY

<u>Number</u>	<u>QUESTION</u>	<u># RESPONSES</u>		
1	Current fund have min investment size	25	13/yes	12/no

		<u># Resp.</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>	<u>HIGH</u>	<u>LOW</u>
1(a)	Minimum Size (\$000)	11	736	408	500	1500	100
1(b)	Does size vary if lead investor	22	11/yes		11/no		
2	Min size changed over life of your firm	22	16/yes		6/no		
2(a)	If yes, has the size increased or decreased	16	12/inc		4/dec		
3	Firm prefer to be the sole investor in early stage investments						
	(a) in the past	23	4/yes		19/no		
	(b) currently	23	7/yes		16/no		
	(c) in the future	21	6/yes		15/no		
4	Does firm provide seed or incubation investments	25	23/yes		2/no		
4(a)	Incubation investments inc, dec, or same	25	11/inc		9/same		5/dec
4(b)	Reasons for participating in seed/incubation investments						
		<u>RESPONSES</u>	<u>MEAN</u>	<u>SDEV</u>	<u>MEDIAN</u>		
	a Higher ROR	16	1.58	0.79	1		
	b Ties to science/univ.	13	2.73	1.19	2		
	c Generate quality deals	20	1.63	0.89	1		

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