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THROUGH A GLASS DARKLY: New Perspectives on the Equity Gap

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PART ONE: SEED CAPITAL - WHERE WE ARE AT?

Plus ça Change

"It has been represented to us that great difficulty is experienced by the smaller and medium sized businesses in raising the capital which they may from time to time require, even when the security is perfectly sound."

"But many small businesses with high growth potential still find it difficult to access the risk capital, and particularly the equity they need to fulfill their ambitions. These lost opportunities represent both an economic cost through reduced productivity growth and job creation, and a social cost to the communities within which they trade."

The two above statements could be successive paragraphs in a contemporary report on the state of financing of small and medium enterprises (SMEs) in 2004. But there is one difference- **72 years!** The first quotation comes from the former British prime minister, Harold MacMillan, reporting the results of a government committee charged to look at the parlous state of finances for smaller businesses in the United Kingdom post the Great Depression of the 1930s. This 1931 report is still remembered for its coining of the ever-green term – *the Equity Gap* - to describe the wholesale unattractiveness of small firms to investors regardless of the underlying quality of the enterprise. The second statement is from a would-be UK prime minister, Gordon Brown, writing an introduction as the Chancellor of the Exchequer to a 2003 HM Treasury report on the equity gap.

Three Score Years and Ten

For most of the succeeding period of a biblical life-span between Macmillan and Brown, small firms have remained in the policy shadow of large business. It was only as a result of catalytic research work carried out in the 1970s by David Birch of MIT that the true importance of SMEs to a vibrant economy started to be appreciated. Birch showed using US data that small businesses were the major engine of an advanced economy's employment growth. Not only did existing and new SMEs buffer the down-sizing effects of large firms but they also were the largest contributors to net employment growth. Birch's work predated the small business driven technology revolution which would become synonymous with the locations of Palo Alto, Southern California and Route 128 Boston. But by the late 1980s virtually every developed economy in the world had started to realize that small businesses were not the 'also ran', vestigial rump of a mature economy but the bed rock on which a large and important part of a nation's future economic and innovative foundations were firmly grounded. Accordingly, the 1990s saw a deluge of reports, initiatives and programs which exhorted as diverse groups as school children, large corporations, government departments and university professors all to become more entrepreneurial. By the New Millennium, Steve Jobs and Richard Branson had become the new Moses indicating, if much of the hyperbole was to be believed, a promised land based of unrestrained free market access and burgeoning new enterprises.

New business is risky and a majority of start-ups deservedly die within one to three years of their birth. But an entrepreneurial society requires investors to take risks in order that the stream of spectacular new ideas that will fuel the future reinvigoration of an established economy can obtain the critical first pounds (or euros, dollars or yen) on which the nascent





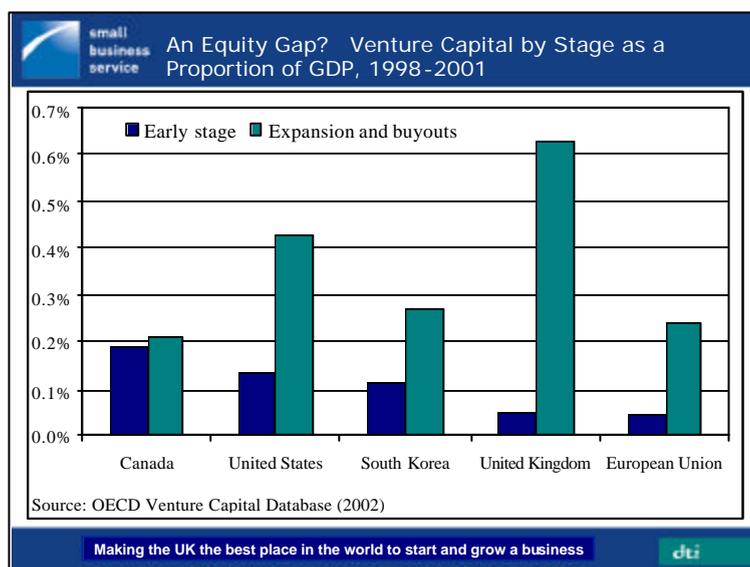
enterprise relies. Thus, the renaissance of the importance of SMEs, particularly as a major means of ensuring technological innovation, has been intimately associated with the growth of *venture capital* finance, often termed *risk capital*. The continuing and dominant success of the United States economy in the commercialization of new technologies, has become the biggest single argument for the value of new venture finance. America's ability to create large numbers of both individual (business angels) and institutional (venture capitalists) conduits to invest in high potential but also highly speculative ventures has been one defining characteristic isolating the USA from otherwise comparable European economies.

A European Paradox

Europe has not kept up with the USA as a powerhouse of new technology commercialization. For Europe, the problem is simply put. If an investor is to be rational, regardless of whether acting as an individual or an institutional investor, he or she would invest in Management Buy-Outs and other later-stage Private Equity instruments. The rational investor would eschew any invitations to invest in early-stage and particularly new technology investments. Over the period since the 1980s that the British Venture Capital Association (the UK is the largest venture capital/ private equity industry outside of the US) has been able to collect performance figures, early stage investments have seen a 'cash to cash' Internal Rate of Return of 4.7% p.a.. Over the same period, large MBOs have registered a return to investors of 16.4% p.a. In the last ten years, the normal cycle of a closed-end fund, the returns to early-stage in the UK has been *minus* 10.6% compared to larger MBOs *plus* 17.7%. In the US, the results are reversed with early-stage/seed investments providing a far more attractive return at 39.8% p.a. than all MBOs at 8.5% p.a. This disparity in comparable investment performances, particularly in the domain of early-stage technology enterprises, has had inevitable consequences. As one senior UK venture capitalists replied when asked if his fund invested in British high-tech start-ups:

"If it has got coloured wires and a plug, we won't touch it!"

That European investors have followed this trenchant, (albeit jaundiced) advice is uncontested. And the earlier the stage of investment, the greater the disparity between supply and demand. The UK industry association does not even attempt to record seed capital statistics which have become rounding errors in an aggregation of all stages of venture capital and private equity investment. As the UK government's own statistics show, the UK has the worse early-stage/late-stage ratio of risk capital funds available of any major economic region in the world.



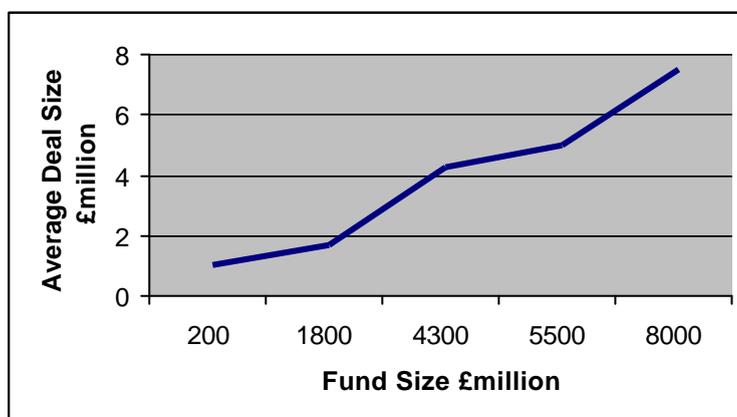


The result of this relative dearth of early-stage equity finance is likely to be a major contributor to the widespread policy concern – termed the *European paradox* – that European scientists may produce world class IP (intellectual property) but the fruits of their endeavors are then captured and capitalized by American and Asian businesses who more effectively and quickly commercialize innovative opportunities regardless of their origins. A modern economy lacks early-stage venture capital and the presence of experienced investors able to nurture and grow new technology enterprises at its peril.

Small is Ugly

In contradiction to the popular catchphrase “*small is beautiful*”, the patent truth seems to be that small is downright ugly when it comes to fund management within venture finance. As UK and European funds have increased in size they have abandoned seed and then start-up finance. Large funds have migrated to large later-stage deals in Europe. The huge increase in funds allocated to venture capital as an alternative asset class has exacerbated this trend. A managing partner faced with a fund of half a billion dollars in a closed end fund, a five year investment horizon and a requirement for net IRRs to the limited partners in the high teens/low twenties, faces some very clear market signals. He or she feels little need or obligation to dabble in a sprinkling of 100:1 outsiders needing set-up finance of less than a million dollars and a ten year period of grace before any returns are confirmed. As a consequence, as the size of the fund under management by venture capital firms increases so will the minimum and average amounts invested in first round portfolio companies.

Relationship Between UK Venture Fund Size and Average Deal Size 1984-2002



This association between fund and deal sizes is in part because of the tyranny of indivisible fixed costs. A good investment executive in a competitive professional labor market does not cost any less because the finance is to be invested in small rather than large tranches. The ‘due diligence’ necessary to assess the prospects of a novel technology-based enterprise is no less costly if its founders are seeking \$500,000 seed funding as apposed to \$10 million expansion finance. Further, a general partner on a 2% (of total fund value) fee income and a carry of 20% of net capital gain has a very clear rationale to go for as large a fund as possible. When these structural disincentives to investing small sums of money are aligned and compounded with the greater uncertainties and risk of early-stage technology investing, there appears an unassailable logic for investors to abandon the types of speculative investment opportunities that have lead in the past to VC financed industry revolutions in the form of Microsoft, Apple, Cisco, Amgen, eBay etc.





Tyranny 1: Sources of Venture Capitalists' Risk in Seed (Technology) Investment

Source of Risk	<u>Internal (I) or External (E)</u>	<u>Characteristics of Risk:</u>
Management Risk	I	the entrepreneur and management team possess insufficient skills to grow the company effectively and profitably
Market Risk	E	the product/service introduced by the firm is insufficiently attractive to the market place to generate the necessary sales revenues, the target market is too small, or competitors react too vigorously
Technology Risk	E	the proposed novel technology or its application proves unsuccessful by either not working or producing insufficient benefits to potential users
Pricing Risk	I/E	the investor over-estimates the terminal value of the enterprise and, thus, under prices the contribution of equity provided
Finance Risk	I/E	the enterprise does not generate the scale of revenues or profits to meet the investment return targets of the investors and/or cover debt interest



Government Policy Responses

The supply of seed capital is universally perceived as problematic. It is, and has remained, the venture capital industry's 'skeleton in the cupboard' in all regions outside the USA. Government has sought to address these equity gap issues by both supply and demand side initiatives. Ironically, the single most common contemporary policy response is to use the experience of the US Government's *Small Business Investment Companies* program (SBICs) to increase incentives to private investors. The logic of these 'equity enhancement' schemes is that with the state providing subordinated finance to commercially sponsored early-stage funds, the positive returns to private investors can be leveraged sufficiently to attract their commercial interest and involvement. Typically government funds are invested first and repaid last thereby increasing further the leveraged returns to the preferential, private investors' equity contribution. In a smaller number of cases, the private investors are also offered guarantees covering part of their equity exposure to the fund.

PART TWO: TIME FOR A NEW PERSPECTIVE ON SEED CAPITAL?

In order to understand how seed capital *really* works, it is necessary to explore the character and dynamics those funds and to understand the behaviour of investment executives which have actually undertaken this challenging investment activity. This empirical observation is particularly important as only a minority of VC general partners actually engage in any early-stage investment activity at all. To this end, the authors engaged on a set of interlinked and contiguous research activities. Specifically, the problems were addressed from three separate but related levels of analysis:

Tier 1: Venture Capital Funds - using secondary data sources from an established industry database

Tier 2: Top Management Teams in Venture Capital Firms – using empirical observation prior to collecting secondary data including archival materials

Tier 3: Individual Investment Executives in Venture Capital Firms – using the results of findings from an experiment on business school participants

Who Actually Makes Seed Capital Investments, and Does Fund Size Matter?

At the most aggregated level, we explore the actions of venture capital funds that have demonstrated a minimum threshold level of interest in seed investments. Our analysis reviewed the portfolio compositions of nearly 3,000 funds worldwide between 1962 and 2002 – a period which represents virtually the totality of VC investment activity to date. We only focus on funds that have made at least 10 portfolio investments, thereby reducing the bias that may emerge from including less active funds. We have also excluded venture backed, internet-based investment from our analysis in order to remove the 'bubble effect' of the dot.com era. There are two parts to our analysis: i) identifying the factors that distinguish the funds that *have* made seed investment from those that have not; and ii), for those funds that have made seed investments, identifying the factors that contribute to a higher intensity of such investment.

Our results highlight several important associations and interactions. In particular, the longer the VC fund has been in existence, the more prepared its managers are to make seed investments. Cumulative experience appears to matter in an activity known for its difficulty. The study discovered that some of the largest and most established VC funds, particularly, in the US, had also made the most seed investments (see Table 1). This fact is not well known with many industry observers believing most seed funds are small specialist entities.

However, the relationships between scale and seed activity is not linear. An “inverse U” shaped curve exists indicating that, as a fund increases its portfolio numbers, it also invests in more seed deal until an inversion point when increased portfolio size becomes associated with an overall decline in seed activity. Conversely, the relationship between total invested capital and seed activity is a “U” shape. As funds get larger they do less seed deals but this relationship changes and the very largest funds are, once again, active seed investors. However, given the scale of these very large funds, their seed activity frequently remains largely hidden.

These non-linear relationships suggest that there exists both a minimum and maximum scale efficiency in making seed investments. Particularly, a fund can be too small (as measured by the value of funds under management) for seed activity. Also as a portfolio gets larger in number of firms, the level of seed activity increases and then declines with further portfolio growth. These findings have significant policy implications for the state as a major funder of seed capital. Our results also highlight the importance of *exploration* by the fund manager. Investors in new technologies need to know what innovations may be imminent - heralding both continuous and discontinuous change - from a close observation of research activity. A new technology might have enormous effects on society and, as such, present huge commercial opportunities provided the investor was closely attuned to and observant of the changing technology landscape. Thus, when viewed in this context, our results suggest that seed investing may be an important mechanism for investors to stay at the forefront of industry developments. In essence, for the larger funds with substantial technology interests, seed capital investment may be justified as much as an *advanced intelligence* activity as by any capital gain consequent on the relatively unimportant levels of monies invested.

Assessing Deal Flow – What Really Counts?

Talking about the ‘behaviour’ of a fund is to anthropomorphise an intangible object. The fund is a legal envelope that defines the rights and responsibilities of a number of investors or limited partners regarding the husbandry of a fixed sum of money for investment, and any returns flowing from that investment. Funds *per se* can neither invest nor disinvest. Executive decision making, including the crafting of fund strategies and subsequent investment allocations or exits, is the responsibility of the professional staff, i.e. the general managing partners of the VC firm. In order to gain a deeper understanding as to why professional investors who adopt certain strategies may be more or less open to making seed investments, we move beyond the fund to also focus on the actions of the *top management team* level of VC firms.

The data for this second study embraced the investment history of 112 US venture capital firms over a 6-year period (1996-2002) and included building a detailed account of the prior experience (education and industry experience) of the firms' top decision makers. We were interested in understanding in detail what type of investments had individual VC firms made, and the performance outcomes of these investments. In addition, we sought to distinguish between different areas of expertise among general partner investors and their consequent effects on the selection and success of their portfolio companies.

We judged the expertise of the management on both specialist and general competencies:

specific human capital or *requisite expertise* pertained to knowledge and skills related to financial risk appraisal and management,

general human capital pertained to knowledge and skills that are more detached from the context of portfolio management.





Finally, we examined the degree to which the status and reputation of the VC firm, facilitated or deterred its involvement in seed investing.

We found that the type of experience (i.e. human capital) of the top management team members affected both the focus of the portfolio in terms of i) the selected development stages and ii) the relative success of the portfolio investments. More specifically, we found that an executive background in finance-related industries was *negatively* associated with the proportion of early-stage (i.e. including seed) investments accepted by the funds, and positively associated with prevention of bankruptcies (rather than with the achievement of successful exits) among their portfolio firms.

These results led us to speculate that prior experience mattered in terms of how risky investment were perceived, chosen and managed. Thus, although investment analysis and selection is popularly conceived as a set of *learned* skills that are both objective and quantitatively verifiable, our results can be seen to challenge this simplified logic. They indicate that the VC firms' senior investment executives are rather less objectively rational and rather more subjectively *conditioned* that would at first be expected. The national VC industry associations go to great lengths to publicise the professional and objective nature of the decision processes which determine how their members allocate scarce funds to excessive numbers of claimants. Industry statistics show that only around one in a hundred applicants for risk capital is likely to be successful. Over half of all entrepreneurs seeking initial funding from professional venture capitalists are likely to be refused after a cursory inspection of their proposal. Venture capitalists' processes are frequently held up as exemplars of professionalism for other groups of investors. In comparison, business angels are sometimes criticised for not being so objectively rigorous in their analyses and selection processes as formal venture capital firms. Our findings would suggest that venture capitalists' claims to a professional objectivity may be aspirational rather than necessarily factual.

In addition to highlighting the importance of the educational and professional backgrounds of the managing partners for explaining the intensity of seed investing, we also found that a VC firm's social network position further moderated its pattern of seed investing. We found both positive and negative influences at play. On one hand, for high-status firms, executives with a finance industry background were even less interested in early-stage businesses. Status appears to encourage conservatism. On the other hand, VC firms with strong reputations built upon previous successes were sensitised them to take a more risk tolerant approach towards accepting early-stage firms. This suggests that two opposing forces may be in play: namely, a VC firm's high social position may restrain its willingness to invest in unproven industries or companies, while its past successes (and thus accumulated slack resources) may propel it towards experimentation. Essentially, higher fund status and positive investment performance experience makes firms become either more focused on or minimising risk (the "banker approach") or maximising success (the "entrepreneur approach"), respectively. The funds behaviour to new opportunities is likely to change over time depending on previous performance and the general partners' consequent willingness to take risks or play it safe.

This insight from the VC firms' management teams then served to inform our third study which looks at the decision processes of the individual team members.

In the End, It is Individuals that say 'Yes' or 'No'

Just as funds are actually managed by investment teams, these teams are similarly composed of *individual* investment professionals. Whether or not an opportunity is recognised and enacted initially requires the attention and then the direct engagement and





commitment of an analyst. The analyst's recommendation will subsequently be sanctioned or rejected by an investment team or committee in a standardised investment process. Thus, the committee's decision necessarily requires the prologue of individual action. The inter-relationship between prior experience, risk perception and management action have to be measured against the actions and preferences of individual participants. They cannot be fully inferred from a group-level study. Accordingly, our third study involves experimental work at the individual investment executive level. It elaborates specifically on the key issue of the relationship between prior experience (of the investor) and the origination of seed deals.

In particular, we examine the initial *screening* of potential venture capital deals and relate the outcomes to the prior experience of the investor. Our focus on deal screening decisions was motivated by the fact that, as noted, over 90% of incoming investment proposals to a VC firms are eliminated within a very short time. There is a 'two tier' selection process and investors do not waste valuable time, experience and the cost of expert opinions on pursuing due diligence for all but a minority of deals that are perceived as potentially attractive. We suggest that there might be an observable relationship between the characteristics of the deals that do make it through the 'first cut' and some stable predispositions of the individual investor making the selection decision. We start from the assumption that the screening decision maker seeks to either maximizing success (upside focus) or minimizing risk (downside focus). In order to model individual action more credibly, we include both the investor's technical expertise and learning style as elements to the decision model. Underpinning our assumption is a testable hypothesis that previous experience influences current actions.

In order to capture the interplay on the selection process between the characteristics of potential deals and the influence of investor's prior knowledge and experience, we conducted a specially designed experiment. 93 MBA students, members of the Private Equity Club in a major international business school, were invited to respond to three deal scenarios representing varying degrees of uncertainty. Our knowledge of the students undertaking the experiment allowed us to cross-reference their selection actions with the individuals' preferences and expert knowledge.

The results showed that positively responding to uncertain and risky deals depended on: i) the level of deal uncertainty and ii) a particular combination of domain specific knowledge and learning style (see Figure 1). In high-uncertainty deals, the effect of domain specific knowledge on deal screening is negative regardless of the investor's learning style, with a steeper slope for investors with *accommodative* learning styles, i.e. focused on success maximisation. These findings also suggest that high-uncertainty situations may be quite overwhelming with risk concerns becoming paramount. This is consistent with a managerial perspective of risk, i.e. stressing the need to avoid losses as well as a risk aversion in the domain of gains. Investors bereft of information or relevant personal experience of a new enterprise are likely to react negatively. Further, investors with expertise are likely to be increasingly negative at both high and low levels of risk. The former is too scary and the latter is likely to be unattractive for reasons of insufficient profits. This finding is likely to induce a pained response among most entrepreneurs. It appears they are 'damned if they do' (go for high risk/high reward) and damned if they don't (go for low risks/low reward).

The entrepreneurial applicant for venture funds certainly cannot predict the learning style or domain experience of the person who will appraise his application for funds. Very often, the applicant will never meet the person charged with filtering out the unmanageable stream of new business proposals that most venture capitalists experience on a daily basis. All the applicant can do it to try and pitch his/her ideas to funds which have a clear level of experience in the entrepreneur's chosen enterprise area. It may well be highly desirable to use a professional and knowledgeable intermediary to ensure access to appropriate investor





firms. Further, funds that have in the past been successful investors are more likely to be sympathetic to high risk/high reward ideas if they remain in their field of competence. However, such knowledge is not widely available.

Conclusions: Through a Glass very Darkly

In summary, we can observe that increasing fund size is not necessarily a barrier to seed capital investment. Our results provide evidence of a minimum scale efficiency. Thus, there are strong arguments that governments should redirect their activities to supporting not only new specialist early-stage funds but also to encouraging the incremental seed activity of large established VC firms. In Europe, such imprecations by government are not likely to be universally welcome by larger funds nor their limited partners. While the need for seed funds is almost universally accepted by the venture capital community, there is also a consensus that *someone else* should do it. When it comes to seed capital most European investors are *nimby-s*, i.e. not in my back yard. European venture capitalists all too often continue to lack the ideological commitment or the skill sets of their more technologically literate US cousins.

In order to comprehend the nature of seed investment, and perhaps influence its supply, it is evident that the entrepreneurs seeking seed funds must be both pro-active and savvy. They need to understand the behaviour and background (education and industry experience) of the VC firms' top management teams. The histories of the team members influence both their preferences and their investment behaviour. Investors' experience also influences the degree to which they can affect the successful outcomes of the enterprises into which they have committed equity finance (Barry 1994). Given the two prevailing strategies of maximising success or minimising failures, the investors in VC funds faces a dilemma. Investment executives from a finance industry background prefer to avoid risky, seed stage investments. They have neither the industry skills nor the aptitude for such an investment activity. These investors are not likely to be the initial sponsors or backers of the next generation of global winners comparable to Microsoft, Cisco or Amgen. However, just as they are less likely to see very successful investment exits, they are also less likely to have their portfolio companies go bankrupt. Poorly informed on technology and cautious, these archetype financiers fulfil every prejudice of the technology community!

Our results also show that two personal experience factors, i.e. specific human capital and learning style, are crucial for effectively responding to potential deals containing a high degree of uncertainty. These insights may help in the design of effective seed capital investment activities. For the state to intervene effectively in supporting the initial financing of early-stage firms, it may need to allocate as much resource to deepening the human capital of the early-stage investment community as to providing a large part of the total funds which are hazarded on new enterprises. Seed capital is a peculiarly challenging investment activity. And governments who see knowledge as a critical strategic asset of a modern economy will similarly have little choice but to continue to find means for its encouragement. We can offer no easy solutions. Seed capital is, and will remain in the foreseeable future, a hard and stony road to travel for both investors and governments alike.





Table 1 Twenty-five Most Active VC Firms Investing in Seed Capital 1962-2002

Name of VC Firm	No. Seed Investments	No. Portfolio Companies	%Seed in Portfolio	Invested Capital (\$000)	Nationality VC Firm	Year Founded
Crosspoint Venture Partners	109	233	46.8%	1,575,698	United States	1978
New Enterprise Associates	104	662	15.7%	4,009,177	United States	1975
Kleiner Perkins Caufield & Byers	100	488	20.5%	2,732,371	United States	1973
Mayfield Fund	74	433	17.1%	2,220,803	United States	1970
J.P. Morgan Partners (FKA: Chase Capital Partners)	72	1352	5.3%	8,685,709	United States	1967
Sequoia Capital	50	469	10.7%	2,160,099	United States	1975
U.S. Venture Partners	49	322	15.2%	1,747,813	United States	1980
Domain Associates, L.L.C.	46	175	26.3%	902,362	United States	1981
Institutional Venture Partners	45	304	14.8%	1,592,411	United States	1960
Ben Franklin Technology Partners, The	41	70	58.6%	21,963	United States	1995
Draper Fisher Jurvetson (FKA: Draper Associates)	38	191	19.9%	833,224	United States	1983
Oak Investment Partners	38	403	9.4%	2,944,157	United States	1960
Mohr	36	168	21.4%		United	1983





Davidow Ventures				818,542	States	
St. Paul Venture Capital, Inc.	36	209	17.2%	1,009,378	United States	1988
Sevin Rosen Funds (AKA: Sevin Rosen Management Co.)	35	200	17.5%	1,052,892	United States	1981
Asset Management Company Venture Capital	34	190	17.9%	278,385	United States	1974
Accel Partners	33	307	10.7%	2,040,098	United States	1983
Venrock Associates	33	331	10.0%	1,318,561	United States	1968
Bay Partners	32	163	19.6%	501,221	United States	1976
Bessemer Venture Partners	32	405	7.9%	1,623,480	United States	1961
Sitra (AKA: Finnish National Fund for Research and Dev.)	32	90	35.6%	17,169	Finland	1987
Sutter Hill Ventures	32	227	14.1%	630,548	United States	1965
Alpha Capital Venture Partners, L.P.	31	50	62.0%	73,667	United States	1982
Centennial Ventures	31	178	17.4%	1,020,368	United States	1980
Greylock	29	340	8.5%	1,172,839	United States	1968

