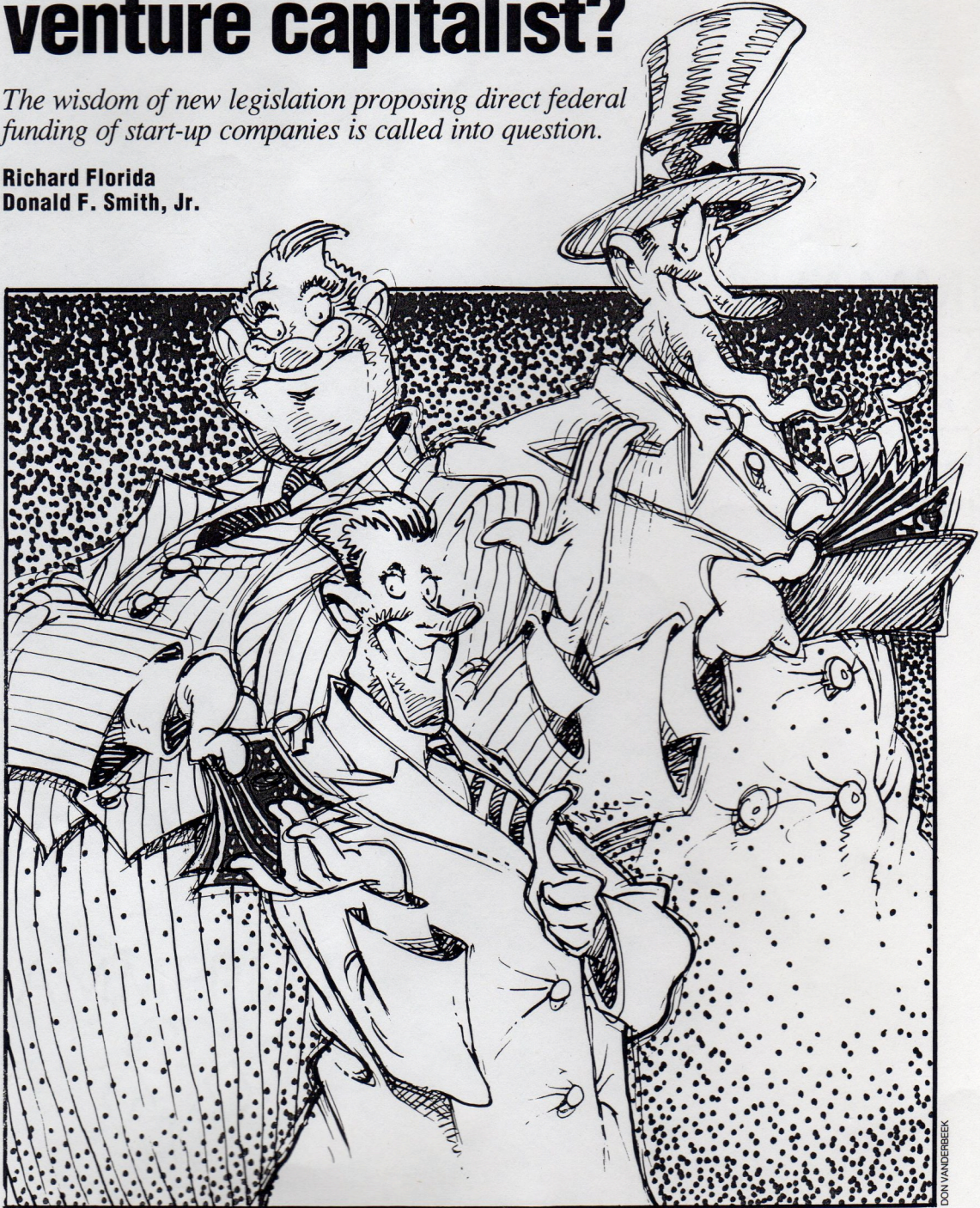


Should the government be a venture capitalist?

The wisdom of new legislation proposing direct federal funding of start-up companies is called into question.

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With the coming of the Clinton administration, the idea that the federal government should act as a venture capitalist is suddenly in vogue. In the executive branch and on Capitol Hill, direct government financing of innovative technologies and startup companies is increasingly seen as an essential element in spurring overall investment and long-term economic growth.

In March, the blue-ribbon Competitiveness Policy Council recommended that agencies such as the Advanced Research Projects Agency, the Department of Commerce, and the National Institutes of Health be allowed to invest in business startups, both directly and through a technology bank. The National Competitiveness Act of 1993, which has been passed by the House, seeks to create new government entities and programs to invest directly in new companies as well as venture capital funds. Similar legislation is pending in the Senate.

Proponents of government as venture capitalist, which include members of the Clinton administration, make two basic points—that startup companies are the “engines” that power innovation, technology development, and economic growth, and that in recent years venture capitalists have significantly reduced their investments in seed capital and startup companies in favor of less-productive activities such as later stage investing and leveraged buyouts (LBOs). Because of this structural underinvestment by the private sector, the advocates say, government must step in to close the capital gap in this important area.

This analysis, however, overlooks or ignores a great deal of evidence on the operation and performance of the venture capital industry. Indeed, a closer examination indicates that, far from faltering, the U.S. venture capital market continues to perform exceptionally well, channeling money to technologies and industries that offer high rates of return and playing a crucial role in the birth and nurturing of new firms and the development of breakthrough technologies. It remains one of the great strengths of the U.S. financial system, envied by

The authors were at the H. John Heinz III School of Public Policy and Management, Carnegie Mellon University, while researching this article.

our major competitors around the world.

Furthermore, the government-as-venture-capitalist view implies more optimism than is warranted about the potential effectiveness of government intervention in this area. Research on previous federal small-business financing efforts as well as state and local venture capital programs overwhelmingly indicates that government is ill-equipped to perform the role of venture capitalist.

Simply put, the venture capital market does not need help; even if it did, the government would be the wrong institution to provide it. Far more effective ways exist for government to help boost investment and long-term growth.

No shortage

The belief that the U.S. economy is underinvesting in startup companies and other forms of high-technology entrepreneurial activity is simply wrong. In 1992, the pool of venture capital in the United States totaled \$35 billion, more than 10 times that of Japan and Germany, the world's second- and third-largest economies, respectively. Indeed, the cumulative amount of venture capital in Japan (\$2.2 billion) or Germany (\$2 billion) is roughly equal to what the United States raises each year.

A big part of the case for government involvement in venture capital turns on the simple fact that total venture capital investment—particularly in startups—has declined during the past few years. Although this has indeed happened, it is a mistake to read this change as sufficient reason for government intervention. Venture capital investments increased sharply during the mid-1980s, then fell just as dramatically. However, even during the lean years of 1990 and 1991, venture capitalists invested about \$3 billion in more than 2000 startup companies. This is two to five times the amount of venture capital invested during the late 1970s when some of the most innovative and successful high-technology startups in history—Intel, Apple, Microsoft, and Genentech—were formed. Moreover, U.S. venture capital investments rose to more than \$2.2 billion in 1992 as the country pulled out of the recession.

Proponents of government involvement further argue that private venture capitalists are abandoning investments in new businesses in favor of those in proven companies as

well as LBOs. In testimony before a House subcommittee earlier this year, W. Andrew Grubbs of Venture First Associates, a fund specializing in startup investments, stated, “The amount of money from this pool that we call venture capital that actually goes into starting new high-tech companies is less than two percent. Two percent!” This 2% figure has since been frequently repeated by proponents of government venture capital and has been accepted as fact on Capitol Hill. But a look at the evidence indicates that it is incorrect.

It is true that the amount of venture capital devoted to seed and startup investment declined from an average of about \$500 million per year in the mid-1980s to about \$150 million in the early 1990s (Figure 1). However, the percentage of funds devoted to seed and startup investments remained roughly 10% of all venture capital investments in both time periods. The biggest decline, in fact, occurred in LBO and acquisition financing, which fell from about \$1 billion in 1988 to just \$40 million in 1991. This reflected a refocusing of venture capitalists' efforts toward the creation of new firms and development of innovative technologies—the very investments that proponents of a greater government role desire. Venture capital investments in critical high-technology fields such as software actually increased during the early 1990s. In 1991, venture capitalists invested more than \$330 million, about one-quarter of all investments, in 185 software companies.

Part of the explanation for the temporary falloff in venture capital investment can be found in a related decline in the amount of money committed to the venture capital industry by outside investors (Figure 2). The data clearly show a decline in new commitments in 1990 and 1991, particularly when compared with the boom years of 1986 and 1987. However, the average of \$1.4 billion in new capital commitments in 1990 and 1991 is more than six times greater than the roughly \$250 million per year committed to venture capital during the mid to late 1970s and still more than the \$950 million committed in 1980, the \$1.1 billion committed in 1981, and just slightly less than the \$1.6 billion committed in 1982.

After 1982, venture capital commitments, fueled by changes in the tax code and the economic boom, exploded, reaching exceptional and

unsustainable highs during the mid- to late 1980s. In fact, these swings in venture capital investments and commitments provide considerable evidence of the market's ability to adjust quickly to changing economic conditions. Thus, government intervention to correct the mythical capital gap of the early 1990s not only is unnecessary, but is based on a misreading of historical trends in the industry and runs the risk of impeding the venture capital industry's ability to react to changing market conditions.

The venture capital role

Government intervention might be justified if venture capital was the only or even the primary source of capital for new business formation. But it is not. Venture capitalists are a relatively minor source of capital for new enterprises. Although comprehensive data on funding sources for new enterprises are impossible to obtain, a few proxy measures help to

convey the relatively small role played by institutional venture capital in the financing of new enterprises.

According to the annual White House report on the state of small business, 600,000 to 700,000 new businesses are incorporated each year in the United States. The Small Business Administration estimates that an average of 10,000 new high-technology companies were formed each year between 1976 and 1986. However, venture capitalists invest in only 1000 to 1800 new companies per year, 10–20% of high-technology companies, and <1% of all business startups. Most of the capital for new enterprises comes either from entrepreneurs themselves, using personal savings and ongoing earnings to bootstrap their businesses, or from wealthy relatives, friends, and other "angel" investors.

In addition, venture capital comprises just a small fraction of the

nation's overall commitment of resources to innovation. Venture capitalists invest \$1.5 billion to \$4 billion each year. The nation as a whole spends more than \$150 billion per year on R&D, nearly \$80 billion of which comes from the private sector. During peak years, venture capital investment, which covers a much wider range of activity than just R&D, represents <5% of private-sector R&D spending and just 2.5% of total R&D spending.

The corporate role

The role of venture capital is also beginning to be superseded by global corporations that are pumping more of their own capital directly into innovative startup companies. For example, according to Venture Economics, an industry group that tracks the venture capital market, pharmaceutical companies have become major players in the financing of medical and biotechnology companies through joint ventures, strategic partnerships, and acquisitions.

In the 18-month period from the beginning of 1990 through the first six months of 1991, corporations provided more than \$1.4 billion in direct equity investments in startup companies—some 50% more than total venture capital investments during this period. Japanese companies reduced their investments in venture capital funds from the 1988 high-water mark of \$82 million to virtually zero in 1991, as they moved to invest in startups directly. Two of the hottest new startups in the potentially multibillion-dollar multimedia technology field, Kaleida Labs and General Magic, were financed almost entirely by large U.S. and Japanese electronics companies.

The substitution of corporate funds for venture capital is, on balance, a positive development. Direct corporate investment provides a steady stream of patient capital for startup companies as well as access to corporate capabilities and facilities in manufacturing, marketing, and distribution. In doing so, it allows startups to avoid the high degree of corporate control frequently demanded by "vulture" capitalists. Further, alliances between fledgling and larger companies make sense for the U.S. economy as a whole because they offer the means for more quickly turning innovations into successful commercial products.

Market correction

Proponents of a greater government role suggest that the venture capital

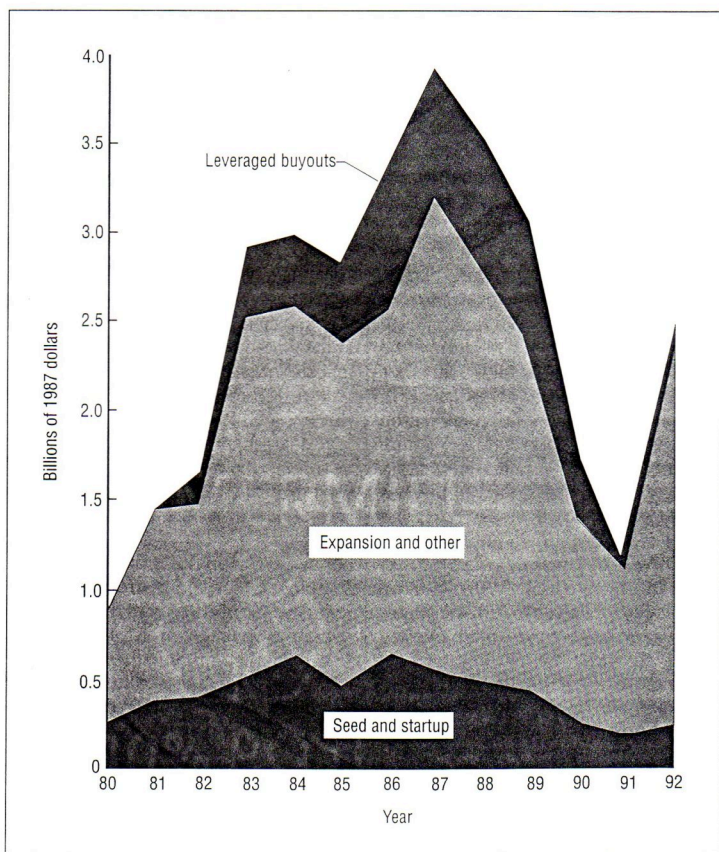


Figure 1. The percentage of funds devoted to seed and startup investments remained roughly 10% of all venture capital investments throughout the mid-1980s and into the 1990s. 1992 figures are estimated based on data from the first six months of the year. Source: Venture Economics.

market is an inefficient and problematic allocator of capital to critical high-technology sectors. The evidence, however, indicates that the venture capital market has been extremely efficient at getting capital where it needs to go. The real question that needs to be considered—and the one that should inform the policy debate—is not whether investments are up or down or whether the share of venture capital going to startups has changed but, quite simply, “What is the efficient level of venture capital in the U.S. economy?”

Proposals to turn government into a venture capitalist come just as the market is beginning to recover from what industry insiders consider the excesses and overfunding of the late 1980s. During this period, billions of dollars of new capital poured into the industry from pension funds, endowments, corporations, and individuals, and investments hit record highs. The venture capital pool increased from less than \$5 billion in 1980 to nearly \$20 billion in 1985 and more than \$35 billion in 1990.

This capital glut caused the market to go haywire in a number of ways. First, venture capitalists, who typically fund only the cream of the crop, made investments that ordinarily would not have been funded. Too much money ended up chasing too few good ideas.

Second, the influx of capital was too much for the professional staffs of venture firms to handle. Venture investing is a hands-on operation, involving extensive oversight and assistance. Startup ventures are the most labor-intensive investments, even though the amount of capital invested is small. Because professionals could handle only a limited number of investments, venture firms turned to bigger deals, such as LBOs, that soaked up more capital and required less time.

Third, the capital glut exacerbated a problem that has plagued established high-technology companies for years—defections of key people to start new firms. Although Americans value entrepreneurship, the decision to start a company may actually be detrimental from the point of view of the U.S. economy as a whole. An entrepreneur's former company may be forced to abandon promising projects and find it difficult to pursue previous breakthroughs. In addition, startup companies, with their limited capital base, lack of distribution and

marketing networks, and less-experienced management teams, often are unable to sustain any initial success they achieved. In short, although venture capital can result in the commercialization of an idea or product that would not otherwise have been developed, it can also pull ideas out of strong, established, well-financed companies and put them in the hands of entrepreneurs who are not capable of fully exploiting them.

Finally, the incredible influx of new capital brought a sizable number of inexperienced people into the business. Indeed, just one-quarter of all funds have a partner with more than 10 years' experience. Many of these new venture capitalists lacked the savvy, the contact base, or the judgment to identify good deals. A herd mentality developed as firms copied each other's investments. Consequently, more startup companies were funded than could hope to survive in industries such as computer disk drives, notebook personal computers, or biotechnology. The result: huge losses and a devastating industry shakeout.

The industry responded the way financial markets are supposed to—it corrected itself. Profits on venture capital investments went into a virtual free fall, and investors redeployed their capital. The internal rate of return for venture funds, which hovered in the 25–35% range for funds

formed in the mid-1970s and 15–25% for those formed in the early 1980s, plummeted to <5% for funds established during the mid- to late 1980s (Figure 3). The venture market fell sharply in 1990 and 1991, before rebounding in 1992.

In sum, the lesson of the 1980s is that for the system of venture capital-backed innovation to succeed, a delicate balance must be maintained. Too much venture capital, although it may lead to more startups, may hurt the economy as a whole. Thus, it would be an ironic mistake for government to intervene just as the venture capital market is returning to a historically optimal and efficient level of financing.

A lackluster federal try

Federal, state, and local governments have made previous stabs at venture capitalism—with slim to disastrous results. The history of the major federal effort, the Small Business Investment Company (SBIC) program, founded in 1958 and often touted as a model by proponents of a more direct government role, is littered with mismanagement, failure, and abuse. In the program's heyday during the early 1960s, more than 700 SBICs were established. But by the late 1960s, they were failing by the hundreds, with just 272 still operating in 1972.

Evaluations of the program have

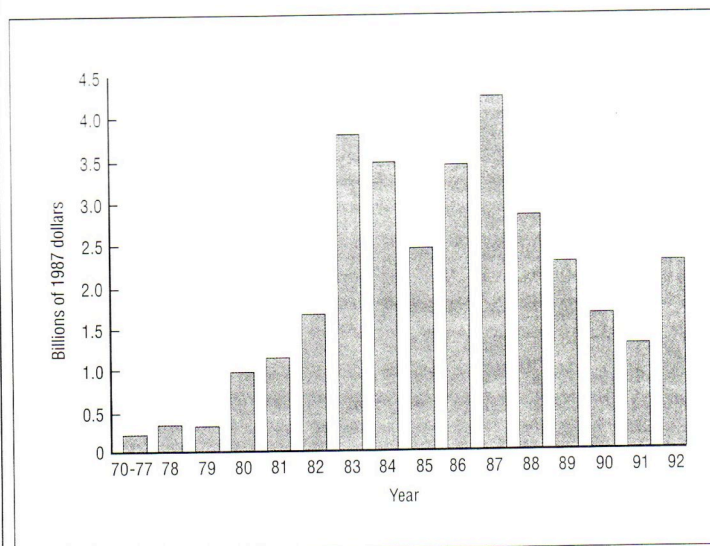


Figure 2. The decline in the amount of money committed to the venture capital industry by outside investors partially explains the temporary falloff in venture capital investment. However, new commitments in 1990 and 1991 are more than six times greater than the roughly \$250 million committed in the mid- to late 1970s. Source: Venture Economics.

been harsh. One early 1961 study stated that the benefits were so great and the controls so few that the program had essentially created "a license to steal." Other evaluations found that SBICs generated significantly lower rates of return than private venture capital funds, and that their lending practices were far more parochial than those of their private counterparts.

One examination of the first 25 years of the SBIC program provides an especially pointed description of the pitfalls of direct government intervention in venture capital. The study, by Venture Economics, noted some positive aspects but said that the program "attracted a lot of people—many with ideas for using their Uncle Sam's money to leverage real estate deals and very few with any experience of investing in small business. This not surprisingly resulted in abuses and losses that necessitated the imposition of a whole slew of federal regulations that, in the process of warding off the piranhas, also hobbled many of the founders of today's venture capital industry." Recent reforms, however, have eliminated the abuses and have boosted the effectiveness of the remaining SBICs.

By the early 1980s the role and function of SBICs had been eclipsed by innovations in the private sector,

particularly the emergence of the venture capital limited partnership as a mechanism for attracting private funds to the venture capital industry. Today, SBICs make up just 5% of the total venture capital pool.

The states tried, too

During the 1980s the number of programs exploded as states made major efforts to spur high-technology development. According to a recent study by Peter Eisenger, 23 states were running 30 different direct venture capital programs in 1990. Eleven of these state programs used private managers to invest state funds, and 19 were organized as state corporations with authority to select and manage direct investments in advanced technologies, targeted businesses, or products. By 1990 the states had generated a total of \$192 million in public venture capital.

States created these venture pools to compensate for what they argued were regional gaps in the availability of venture capital that were contributing to disparities in high-technology industry location and employment. This thinking, however, was misguided, largely because it ignored the fact that capital is highly mobile and flows to technologies and areas that offer the most promise of a high rate of return. Research that we conducted with Martin Kenney of the University

of California at Davis shows that venture capital funds in the United States are channeled from four or five major financial centers to regions such as the Silicon Valley that have the entrepreneurial networks, support structure, and technological infrastructure required to generate and sustain a high level of promising high-technology business startups. In short, regional capital gaps exist because there are too few deals to attract venture capital—not because the capital markets are inherently biased and inefficient.

Not surprisingly, the most successful programs have been in states such as Massachusetts, where the technological infrastructure to support high-technology business development exists. Also not surprisingly, in state programs managed by private venture capitalists much of the locally subsidized venture capital has been exported to high-technology enclaves. States that have tightly restricted investments to local firms have seen much of their money invested in marginal or poor deals.

State venture programs fail to measure up to privately provided capital on every relevant measure of performance. Evaluations indicate that most state programs have lost money or generated rates of return considerably below those of private funds. The programs have also failed in terms of more conventional economic development criteria such as business generation and job creation. Even the most favorable evaluations conclude that the programs have created only a very small number of new businesses and generated only a limited number of jobs.

One survey by a University of Wisconsin research team of 14 state venture capital programs found that more than 17,500 jobs were generated at a cost of \$7362 per job. Other studies suggest that these findings considerably overstate the extent of job creation from these programs. A comprehensive state audit of nine state and local investment programs in Illinois found a huge discrepancy between the number of jobs reported as being created and the number of jobs that actually were created. The audit concluded that public investment produced just 611 jobs, <10% of the 7501 jobs claimed to have been created by these programs.

Currently, many states are reducing their commitments to venture capital and critical technologies or pulling out altogether. Recognizing the inef-

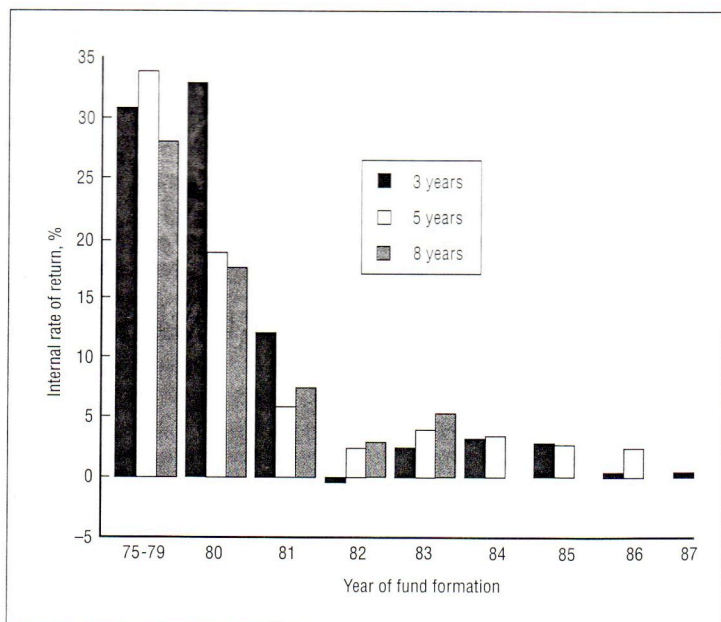


Figure 3. Venture capitalists funded more startup companies than could hope to survive. The result: huge losses. The internal rate of return for venture funds plummeted to less than 5% for funds established in the mid- to late 1980s. Source: Venture Economics.

fectiveness of such programs, several midwestern manufacturing states are moving toward a more integrated approach to technology and economic policies. In large part, these states are trying to harmonize regulatory, financial, environmental, and other policies in order to foster the development of a business climate and economic infrastructure that is conducive to world-class economic performance across traditional and high-technology industries alike.

Rethinking roles

In sum, these state and federal efforts indicate that government is out of its element in the high-risk, high-return world of venture capital, where tremendous profits from one or two home runs are needed to offset nine or 10 losers. Government managers are simply not suited to the tasks required. For instance, nurturing even one success story requires venture capitalists to become intimately involved in the management of startup enterprises. They must make hard-nosed decisions on increasing investments in promising companies, thus putting more money at risk, as well as closing down the laggards. Government, on the other hand, tends to avoid termination of any sort, and it often pours ever more money into existing projects. Of course, at the federal level, government venture capitalists are likely to face pressures to invest in pet projects in key congressional districts.

Given the intricate nature of the work of venture capital professionals, even if a venture capital shortage existed, it would be irrational for government to get involved. There are much more efficient and effective ways that government can affect capital flows, such as altering the tax rate on capital gains, liberalizing restrictions on private investors, and providing regulatory relief for public venture capital funds.

The main problem facing the U.S. technology system today is neither too little venture capital nor lagging critical technology. Rather, it lies elsewhere—in R&D labs, factories, and startup and established companies that produce an impressive array of breakthrough technologies but still fail to provide the follow-through required for long-term economic success.

Although government's focus on quick-fix solutions such as venture capital funding may make political sense, it fails to address the bigger picture. It is increasingly evident that

the problems are systemic in nature. The United States and the other technologically advanced nations are caught up in a shift to a new age of industrial capitalism—a shift to high-performance economies—where the keys to success are harnessing the ideas and innovative capabilities of all workers from the R&D lab to the factory floor to turn out high-quality, state-of-the-art products.

Government interventions in the venture capital market, or in critical technologies such as those proposed by the Clinton administration and by Congress, can do little to address this underlying transformation. Such economic changes require a systematic reshaping of government policy in ways that support the new economy. Indeed, the current environment of regulatory, tax, and fiscal policies that grew up to meet the requirements of the old mass production economy is ill-equipped to meet the needs of the emerging, high-performance economy; worse yet, it may even be an obstacle to the emergence of that new system. U.S. firms and managers operate within a maze of economic and policy incentives that were well suited to a mass production environment but that frequently create disincentives for needed restructuring along high-performance lines. Bank lending policies, for example, typically require that small and mid-sized manufacturers put up their inventory as collateral for bank loans—a practice that impedes their ability to adopt the just-in-time inventory and delivery practices that world-class, high-performance manufacturers require.

What government should do

The critical need for government is not to help finance or invent new technologies but to help put in place the incentive structure, business climate, and economic infrastructure required for this new, high-performance economy to flourish. The federal government could begin by eliminating biases in the tax code for real estate and other speculative investment, developing a more flexible and responsive system of financial and industrial regulation, drastically reducing mission-oriented military spending that enables companies to avoid the restructuring and commercial discipline required to compete in world markets, and shifting responsibility for technology- and productivity-oriented programs and activities from the federal to the regional, state, and local levels, giving them the

flexibility to develop the economic climates required for success in the new economy.

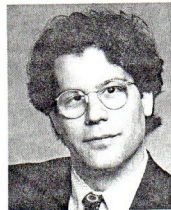
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