BOULEVARD OF BROKEN DREAMS

Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed —and What to Do about It

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CHAPTER 5

THE NEGLECTED ART OF SETTING THE TABLE

In recent years, many nations in Europe, Asia, and the Americas, as well as local and regional governments, have adopted initiatives to stimulate new ventures. While these programs' precise structures have differed, the efforts have been predicated on the rationales delineated in the preceding chapters. While some of the programs have been dramatic successes, governments worldwide have also squandered many billions of dollars on ill-conceived efforts. In some cases, these programs have even left their entrepreneurial sectors in worse shape than before. In the next four chapters, we'll seek to understand what works and what doesn't.

Government initiatives to simulate new venture activity can be divided into three broad categories. The first two focus on creating a more hospitable environment in which entrepreneurs and venture capitalists can operate; the final one encompasses direct interventions to boost the availability of financing. In economic terms, the initial interventions can be seen as boosting the demand for venture capital; and the final one as increasing the supply.

Looking across many nations and decades, we can see clearly that the third set of programs have had a magnetic appeal for politicians and bureaucrats alike. Maybe it is simply a lot more fun handing money out to entrepreneurs than worrying about whether legal rules are conducive to efficient contracting. Or perhaps boosting funding lends itself to the kind of monkey business described in the section titled "Capture" in chapter 4. But whatever the reason, the process of table-setting—of ensuring that the environment is favorable to entrepreneurs and venture investors alike—has been far too neglected. In

this chapter, we'll look at ways that governments can freshen the environment for entrepreneurs.

Enhancing the Entrepreneurial Climate

The first set of initiatives we'll look at has sought to boost the attractiveness of the climate for entrepreneurship. No matter how many inducements are offered to make venture investments, without attractive investment opportunities the venture industry is unlikely to be sustainable.

The most dramatic example of a country that has understood this lesson is Singapore. Singapore has developed a dazzling array of policies designed to promote entrepreneurial activity. Many of them, to be sure, involve direct subsidies to entrepreneurs and venture funds.

But the government, after trying various direct subsidy efforts in the 1990s, soon realized that more was required.[1] For instance, while numerous venture firms had been formed in response to government incentives, most tended to focus on investing in mature companies that were already profitable rather than in raw start-ups. On a more fundamental level, government leaders feared that the consequence of a conservative social environment and the extensive government intervention in the economy would be an unwillingness to take risks. Moreover, the abundant supply of attractive engineering positions for graduates of top schools led to their unwillingness to explore entrepreneurial options. Worried about the implications of these patterns for Singapore's long-term competition with China and other burgeoning economies, the government launched a variety of "indirect" initiatives, focusing on creating a climate where these investors could thrive.

While not all efforts have been equally successful, Singapore deserves credit for its focus on creating a favorable entrepreneurial climate. The list below gives a sense of the range of activities it has sought to encourage[2]:

- Spending for academic research was dramatically increased. For instance, funding at the National University in 2001 was three

times the level in 1996. In conjunction with this spending, the government boosted support for entrepreneurial activity at various levels at top universities, from classes for students to incubators to nurture ideas developed by faculty.

- The Agency for Science, Technology and Research not only funds basic research and licenses the output, but reaches out to provide financing to others' "orphan" technologies, as well as subsidies or free consulting advice about commercialization strategies.
- Singapore's enterprise development agency, SPRING, encourages associations that can bring together small and new enterprises for efforts such as training, joint research, and investments in new technologies; it also provides grants for start-ups to hire consultants.
- The Economic Development Board subsidizes part of the research expenses of corporations beginning new initiatives.
- The Techno-preneurship Investment Fund and Singapore's sovereign wealth funds (see chapter 8 for more discussion of these funds) invest in leading global venture funds. While these investors have no special rights or provisions beyond those that other (purely financially motivated) investors receive, these investments help establish relationships that may prove helpful for Singaporean start-ups.
- The Ministry of Manpower and other agencies expedite the paperwork for foreign entrepreneurs interested in beginning a high-growth new business in Singapore.
- A variety of competitions and events with names, such as the BlueSky Festival and Enterprise Day, highlight the potential for new growth enterprises and seek to identify promising nascent entrepreneurs.[3]

One of the most ambitious of these efforts has been the creation of the Biopolis.[4] This seven-building complex, constructed at an estimated cost of $500 million, includes state-of-the-art laboratory facili-

ties and other amenities. The nation has aggressively pursued—and lured from institutions as august as MIT, the National Cancer Institute, the University of California, and Kyoto University—top researchers to the Biopolis, offering a combination of state-of-art facilities, generous research funding, stratospheric salaries (reputed to be about $1 million per year), and a favorable political climate. (The latter has been particularly compelling for U.S. researchers, who have frequently expressed frustration with the restrictions on cutting-edge stem cell research that the Bush administration imposed.) By co-locating top-flight researchers, government agencies, and private firms, the government hopes to create the foundation for a vibrant biotech industry in the island-state.

Looking more generally, entrepreneur-enabling efforts can be seen as falling into four broad "buckets":

- Getting the laws right
- Ensuring access to cutting-edge technologies
- Creating tax incentives—or removing barriers
- Training potential entrepreneurs

Getting the Laws Right

The first cluster of policies has focused on ensuring that the legal system supports entrepreneurial activity. Complex contracts abound in the entrepreneurial landscape, most importantly, between firms and their employees, their financiers, and their strategic partners. In the United States, these deals allow very young firms to enter into complex and lucrative arrangements even though the start-up has no history or few assets to speak of.

Efforts to promote entrepreneurship in many nations have focused on duplicating the key aspects of the American system. For instance, over the past fifteen years, the Japanese government has lifted curbs that limited the ability of firms to reward employees with stock options, that restricted the types of stock purchase agreements that investors and entrepreneurial firms could enter into, and that prohibited

institutional investors from having assurances that they would not be held responsible for huge losses if a start-up failed.[5] Similar reforms have been taken elsewhere.

The skeptic might argue that these legal restrictions on entrepreneurial contracting may be important in litigious America, but in other nations are simply much less important. While this argument may seem reasonable, backers of the importance of legal rules contend the contracting process is the crucial foundation on which the financing and growth of high-risk, high-return entrepreneurs is built. This argument has been most articulately voiced by Ron Gilson, who is—no surprise!—a law professor:

> Start-up and early stage companies are peculiarly suited to commercializing innovation, yet the character of their organization and the nature of the activity present inherent barriers to their finance. The U.S. . . . manages these barriers and thereby makes early stage financing feasible. The question, then, is whether the U.S. contracting template can be replicated elsewhere: can we engineer a venture capital market?[6]

Gilson relies in his argument largely on historical anecdote (I am of course in no position to throw stones here!), such as the misadventures of nations that have tried to encourage venture activity without having similar legal structures in place. For instance in the German WFG (Deutsche Wagnisfinanzierunggesellschaft) program, the "venture managers" were assured that their losses would be largely covered by the government, limited to modest rates of return from successful investments, and prohibited from controlling the entrepreneurs in which they invested. The program was a miserable failure, generating a return of –25 percent annually.[7]

Large-sample evidence suggests largely the same picture. For instance, an analysis by Antoinette Schoar and myself looks at how the contracts that venture capitalists and the firms in their portfolio enter into vary across developing countries.[8] It highlights the importance of the ability of entrepreneurs and investors to enter into complex contracts, where different outcomes can result if the company's progress

varies. (An example would be convertible preferred stock, where the investor can choose either to get back the amount that he or she invested, or alternatively to convert into common stock. In cases where the firm does well, the investor gets all the upside of a shareholder, but has more protection if things get ugly.) Numerous economic theories have suggested that such complex securities are beneficial to all parties concerned, as they allow control over the firm to be transferred to the party that can make the best use of them. In particular, these securities allocate control to the entrepreneur when things are going well, but allow the investors to assert control if the firm is doing poorly. In this way, entrepreneurs can be sure that if they do a good job running the firm, the investors will not be able to use their special rights to wrest away their hard-earned gains.

In the analysis, we show that entrepreneurs and investors in countries with well-defined legal rules and effective court enforcement rely on these complex contracts, in which the assignment of control depends on the performance of the investment. These contracts resemble transactions seen in the United States, which an extensive theoretical literature suggests is an effective contractual solution to the challenges of financing high-growth entrepreneurial firms. By way of contrast, investors in countries with less well-developed laws and courts are far less likely to use convertible preferred stock, and must instead rely on holding majority stakes in firms.

For instance, one group operating in Latin America had initially employed convertible preferred securities in all its transactions. Their enthusiasm for this investment strategy waned, however, when they began litigating with one of their portfolio companies in Peru. The investors found themselves unable to persuade the judge that their preferred stock agreement gave them the right to replace a third-generation founder of the company, even if the group's shares were only convertible into 20 percent of the firm's equity. After this experience, the group structured its subsequent investments as common stock deals in which they held the majority of the equity. In many nations, our interviewees asserted, not only were the entrepreneurs unfamiliar with equity investments that used securities other than common stock, but key actors in the legal system—lawyers and judges—were suspi-

cious and indeed hostile to such transactions. As a result, they forego the benefits of preferred stock.

Again, the skeptical reader might wonder about our claim that these legal structures are important. Just because a structure is used in the United States, is it really ideal everywhere? We found evidence suggesting that these structures really matter, both to the entrepreneurs and the groups that fund them. For instance, when we looked at the valuations assigned to these companies, we found that venture investments in countries with investor-friendlier and better-operating legal systems had higher valuations. To put it another way, to raise a given amount of money, an entrepreneur would have to sell less of his or her company.

Investments in these nations also seem to perform better for the venture investors. Private equity funds that were active in nations with well-operating legal systems had an average return multiple (the ratio of the amount they paid out to the amount they invested) 19 percent better than the typical fund established in that subclass and that year, while those in other countries had a multiple 49 percent worse than the benchmark. Adopting legal structures that are friendlier to new ventures can apparently make a big difference!

Ensuring Access to Cutting-edge Technology

The second set of efforts seeks to encourage the development and transfer of university technologies. Over the past several decades, there have been numerous initiatives around the globe to encourage the commercialization of university technologies. These efforts were ushered in by the United States' Bayh-Dole Act of 1980, which gave universities automatic title to research funded by the federal government and performed at their institutions. (Prior to that, the schools needed to obtain permission to license the technologies from the government, which frequently proved to be a lengthy and uncertain process.) The legislation led to the establishment of technology transfer offices at many schools and a considerable increase in the patenting of academic research.

The *Economist* recently hailed the act as "possibly the most inspired piece of legislation to be enacted in America over the past half-century."[9] (Of course, there are also critics who have been less thrilled

with the impact of the law, expressing worries about the consequences for cooperation among researchers, among other issues.) But whatever the concerns, the act has been emulated in recent years in nations from Germany to Malaysia.

Systematic evaluations of legislation to enhance university commercialization remain few and far between.[10] But it seems clear that in many nations, it has historically been extremely difficult to license technologies from research institutions, and that such policy shifts address a real need. Similarly, efforts to build academic centers of excellence—such as the Biopolis described above—have had real success when they are realistic in targets and designed with thoughtful incentives that meet the real needs of researchers. (However, see the cautionary tale of Malaysia described below.)

At the same time, cautions have emerged from the experience of some nations with technology transfer, particularly efforts that have involved raising substantial funds to finance academic spin-outs.[11] Numerous schools and governments have been tempted to consider the establishment of funds that would duplicate the activities of independent venture funds. Case studies and empirical evidence raise doubts about whether such efforts are likely to be successful. In some cases, the academic funds have crowded out independent venture capitalists, discouraging the involvement of individuals who would have the ability to add tremendous value to the spun-out entities. In other cases, these funds have been plagued by poor decision-making, putting many millions of dollars into unsustainable companies:

- Boston University's venture capital subsidiary invested in a privately held biotechnology company founded in 1979 by scientists affiliated with the institution. As part of its initial investment in 1987, the school bought out the stakes of a number of independent venture capital investors, who had apparently concluded after several financing rounds that the firm's prospects were unattractive. Between 1987 and 1992, the school, investing alongside university officials and trustees, provided at least $90 million dollars to the private firm. (By way of comparison, the school's entire endowment at the fiscal year in which it initiated this investment

was $142 million.) While the company completed an initial public offering, it encountered disappointments with its products. At the end of 1997, the University's equity stake was worth only $4 million.[12]

- The University of Chicago launched the ARCH initiative in 1987 to encourage commercialization of its own technology and that of Argonne National Laboratory, a federal facility it managed.[13] The group was given a mandate both to license technologies to established firms and to fund start-ups. The venture fund enjoyed some modest initial successes. Shortly thereafter, however, the relationship between ARCH and the University of Chicago was restructured. The ARCH partners received permission to raise a second, more substantial venture fund with far more generous compensation for the venture capitalists. As part of the new effort, they were allowed to invest outside the University, while retaining a formal "right of first look" at the University's technology. ARCH rapidly expanded after raising the second fund, and the share of new transactions originating from the University of Chicago and Argonne fell dramatically. Meanwhile, many at the school believed that in their eagerness to become established as venture investors, the ARCH partners had neglected the more mundane—but necessary—technology-licensing activities.

Relatively few academic-based funds have reached maturity, and data on their activities are limited to case studies of a number of programs. But the difficulties that the pioneering funds have faced—as well as those encountered by their closely related cousins, the corporate venture fund—lead to a dubious prognosis.

Creating Tax Incentives

A third focus has been tax policy. Despite what the previous discussion might suggest, not all entrepreneurs come from academic institutions. Indeed, research[14] suggests that the nearly half the founders of venture-backed firms in the United States were working previously at publicly traded companies. In a classic work, Jim Poterba argued that

decreases in capital gains tax rates might increase the attractiveness of becoming an entrepreneur precisely because of such individuals.[15] He argued that increasing the differential between the tax rates on capital gains and ordinary income would spur corporate employees to found companies, thereby increasing the need for venture capital. Paul Gompers and I empirically find support for Poterba's capital gains tax rate claim: lower capital gains taxes appear to boost venture capital fund-raising.[16] The cuts in the capital gains rate seem to have a particularly strong effect on the amount of venture capital supplied by tax-exempt investors, who are not affected directly by the change. This suggests that the primary mechanism by which capital gains tax cuts affect venture fund-raising is by increasing the demand of entrepreneurs for capital. The limited research done in Europe suggests similarly that entrepreneurial activity is sensitive to capital gains tax rates.[17]

Thus, tax policy changes may also directly affect the willingness of investors to supply capital. Rather than cutting all capital gains taxes, one approach that has been employed in many countries is to create special tax rates for capital gains from investments in entrepreneurial firms. For instance, in the United States, noncorporate taxpayers (including partnerships and other entities) may exclude 50 percent of any gain from stock in qualifying small businesses that has been held for more than five years. (As a result, the marginal effective tax rate on capital gains from the sale or exchange of such stock is 14 percent rather than the customary 28 percent, though the presence of the Alternative Minimum Tax may lead to taxpayers paying at a rate between these two levels.) Similarly, in the United Kingdom, to improve the fiscal environment for entrepreneurs and venture capitalists, effective capital gains tax rates on the disposal of business assets held for more than two years have been reduced from 40 percent to 10 percent.[18] Given the evidence on the effectiveness of capital gains tax cuts, but the very real revenue needs that many governments face, such targeted measures may represent an attractive middle road.

If taxes make it costly to succeed as an entrepreneur, other policies—especially common in Europe—punish failure. Another set of initiatives to boost entrepreneurship, then, addresses policies that make it costly to fail. In light of the experiential nature of the entrepre-

neurial process, policies that punish individuals who are involved with failed ventures can be counterproductive.[19] In recent years, nations such as France, Italy, and Switzerland have lifted punitive legal sanctions that they historically imposed on managers and even nonexecutive directors of bankrupt firms. Singapore has gone even further, and sought to lift the *social* sanctions against failure by establishing the Phoenix award, which annually rewards a tenacious entrepreneur who has overcome an initial failure.

Training Entrepreneurs

A final set of policies seeks to better prepare entrepreneurs by providing education. These policies have taken a variety of forms, from general training to hands-on assistance with the development of business plans. One common model, for instance, is inventors' assistance programs, organizations that help inventors evaluate their proposed products or services before they are introduced. These initiatives typically help the inventor make a more informed decision on whether to pursue an idea, as well as providing background information on financing and strategic routes frequently chosen by entrepreneurs. One estimate is that there are 150 of these centers in the United States alone. Entrepreneurial training programs more generally have been launched in at least thirty nations.[20]

There has been little systematic evaluation of these programs, which are challenging to study because the individuals selected for them are typically particularly promising entrepreneurs. But the work that has been done, in very different settings, paints a positive picture of the benefits from these interventions. Thomas Åstebro and coauthors examine the Canadian Industrial Innovation Centre's Inventor's Assistance Program.[21] In this program, entrepreneurs paid a modest fee to get recommendations on the potential of their idea. The researchers examined the amount spent to develop the idea and its potential returns, as well as what would have happened had entrepreneurs not gone to the Centre for an assessment. The analysis suggested that expenditures on this program have a very attractive rate of return to society, estimated to be between 36 percent and 70 percent annually. But this analysis depends critically on the authors' assumptions about what

would have happened in the alternative universe where the entrepreneurs did not get advice from the Centre. In particular, if contrary to the authors' assumptions, entrepreneurs would have soon figured out that their ideas weren't viable even without this consultation, or if bad advice from the Centre discouraged some inventors with great ideas from pursuing them, the results of the analysis could differ markedly.

A very different setting is examined by Dean Karlan and Martin Valdivia, who look at one of the best-known and respected programs that teaches business skills to low-income entrepreneurs.[22] The authors worked with the Foundation for International Community Assistance in Peru, an organization that provides microfinance for poor, female entrepreneurs. Here, the authors were able to run a control: some groups simply met weekly and provided credit and collected repayments, while in others, the meetings also included mandatory training classes. Among the topics covered were competitive strategy, marketing approaches, accounting, and finance.

When the authors surveyed the participants in the classes and the control groups, they found several effects. The class attendees reported engaging in some of the exact activities that were taught in the program, such as maintaining records of sales and expenses and thinking proactively about new markets. Their firms also may have enjoyed greater sales and profits. Interestingly, the greatest impact appears to be had on those members of the lending circles who initially had the least interest in participating.

Increasing the Venture Market's Attractiveness

A second set of policies has sought to increase the attractiveness of the venture capital market to institutional investors. To be sure, steps to boost the attractiveness of entrepreneurship, as described above, are likely also to lure venture funds. But these efforts are frequently different, as they tend to focus on features that international investors, rather than local entrepreneurs or domestic sources of capital, regard as most important.

This assertion might seem surprising. After all, should not local investors be the most inclined to invest in the domestic market? For instance, an extensive body of academic work suggests there is a home bias for investors: we are more comfortable investing in a firm in our hometown than in one across the country, much less across the world.

But there are two countervailing considerations, which suggest why relying just on local investors is often not enough:

- *The relative sizes of the markets.* Given the highly dispersed nature of the world's capital, there will be far more capital outside a given nation than inside. Even a very modest allocation to venture capital on the part of global investors will swamp a more significant domestic allocation in all but a few nations.
- *The greater sophistication of global investors.* In most markets with poorly developed venture capital industries, institutional investors have had very limited exposure to the asset class. Meanwhile, major pension funds, funds-of-funds, and government investment corporations have been investing in this asset class for decades. Over the years, they have developed an understanding of what makes an effective venture capital group, and the confidence to make major commitments when a group satisfies their criteria.

As a result, many of the recent success stories, such as Israel and Singapore, have had the growth of their venture capital industries driven not by inexperienced domestic investors, but global players. In these cases, only after the markets had been validated by global players did local investors begin playing a significant role.

Allowing True Partnerships

At the same time, however, interesting global investors in one's market can pose significant challenges. Foremost among these is ensuring that local and national tax and partnership laws are in complete compliance with what has emerged as the global de facto standard.

In particular, limited partnerships have two features that make them particularly attractive to potential institutional investors:

- *Limited liability.* The "limited" in limited partnership refers to the fact that the outside investors (limited partners) can lose no more money than the amount they put into the fund. Consider a case where a pension invests a million dollars in a venture fund, which invests in a biotechnology company whose experimental drug unfortunately ends up having fatal complications during a clinical trial. The relatives of the victims can sue the company, its leaders, and the venture capitalist for various damages. These would include the wages the victims would have earned, compensation for their pain and suffering, and perhaps punitive damages if the firm and the venture capitalists were negligent, and might total many millions of dollars. But the pension fund can lose no more than the million dollars it originally invested, even if the venture capitalists cannot pay off all the judgments against them and declare bankruptcy. This protection gives institutions much more comfort in making high-risk investments.
- Tax flow-through. Essentially, a limited partnership is "invisible" for tax purposes. Rather than the partnership facing levies, the individual partners are taxed as if they had made the investments themselves. This distinction may sound minor, but it has a great deal of importance to tax-exempt institutions, which make up much of the pool of venture investors: university endowments, pensions, and government funds typically do not need to pay taxes on their investment profits. If taxes need to be paid at the partnership level, these institutions would end up having paid taxes on their investment gains in any case. These provisions also typically allow partners who are taxable to use the losses in the early years of venture funds (when companies have typically not gone public and are still losing money) to offset gains elsewhere, thereby reducing their tax burden.

Indeed, a considerable number of nations, from Japan to Germany, have shifted the ways in which government treats venture capital funds to become more aligned with the approach in the United States. Such shifts are in fact a necessity. Most venture capital investment groups

are relatively leanly staffed, and do not have the time or patience to understand the complexities of an idiosyncratic national system. Nations that have had such systems have found it extremely difficult to attract institutional investments to their venture funds, even if the opportunities for attractive returns are substantial.

One illustration of this point is New Zealand. As we'll discuss in the next chapter, the government put into place in 2002 a well-designed program, the New Zealand Venture Investment Fund, to encourage the formation of capital pools to invest in early-stage businesses. Within a few years, the funds had initial successes, but still most global institutions were reluctant to invest in New Zealand funds. Essentially, the funds were only able to raise money from wealthy individuals, corporations, and local financial institutions.[23] In a study David Moore, Stuart Shepherd, and I conducted, we interviewed investors and found that almost all of them had some motivation other than financial returns. Local financial institutions often cited a desire to "give something back" by helping along this local effort; the corporations noted their interest in a obtaining a "window" on some intriguing new technological area; and the individuals mentioned some sort of personal connection, such as a Kiwi friend or a earlier holiday in the country.[24]

One of the reasons for the Venture Investment Fund's inability to interest pensions and other financial investors lay in the lack of a limited partnership structure. While the leaders of the venture development efforts realized early on that this lack was a major problem, they were unable to get key tax officials to understand the magnitude or urgency of the problem. Not only did absence of a limited partnership structure raise questions in the minds of investors about their liability, but it also created tax headaches: the New Zealand tax code taxed partnership profits at the fund, rather than limited partner, level. Investors would thus be facing taxes on their capital gains—even though they were tax-exempt. This feature was a "deal killer" to most.

In 2008, eight years after the inception of the venture initiative, the New Zealand government adopted a limited partnership bill, which brought the nation into compliance with worldwide standards. It is still too early to tell whether this change will trigger a surge of money into the Kiwi venture market—the challenges of a small market far

away from major financial centers remain—but without it, there would have been very little chance.

Creating Local Markets

There are other steps that can specifically help ensure the comfort of venture investors. One of them is enhancing local markets for publicly traded firms, so that there are nearby opportunities to take venture-backed companies public.

One of the great fears of venture capitalists when considering deals in emerging markets is that the investments will be difficult to exit: it's a hotel you can check into, but never leave! Public markets are important to entrepreneurs as well. As much as they may appreciate the capital and advice that venture investors provide, entrepreneurs fiercely value their independence. Unless there is some assurance that the venture investors will eventually be able to exit, they are much less likely to get involved in the first place.[25]

During the 1990s, it was commonplace to dismiss these concerns. The presumption was that good technology companies could be readily taken public on the NASDAQ market in New York. But as the barriers to public offerings in the United States have apparently risen, the share of offerings by young firms in the American market has waned. (Whether this pattern is owing to the Sarbanes/Oxley corporate governance reforms, the efforts to curb dubious practices by analysts at investment banks, or the broader changes in the world economy, can be the subject of a fascinating debate, but one that would take us too far afield.) Whatever the cause, a healthy local stock market for growth firms is more important than ever.

The experience of India, which has experienced a spectacular growth in venture capital activity in recent years, is a case in point. The amount of capital invested in young and growing firms exploded from $570 million in 2001 to $3.8 billion in 2007, much of it driven by American, European, and Middle Eastern capital. In addition to the robust growth that characterized the nation and the well-trained workforce, venture capitalists were lured by the robust public markets that characterized India until the beginning of 2008. For instance, in September 2008, 4,917 firms traded on the Bombay Stock Exchange,

with 225 new listings in the past thirty-two months.[26] In fact, in many instances, venture capitalists invested in companies that were already publicly traded, and nurtured them while their market value grew and they could achieve a profitable exit. While this market is far from an efficient one, and suffered substantial losses during the financial crisis, it is an important asset for India's entrepreneurs.

The most compelling illustration of the power of the public markets was Warburg Pincus's experience with Bharti Televentures.[27] Between 1999 and 2001, Warburg invested $292 million for eventual ownership of 18 percent of the mobile telephony firm. At the start of the process, the company had 104,000 subscribers, two cellular licenses and one landline license, and a market capitalization of $100 million, while India had a total of 3.6 million cell phone users. Bharti used the investment to acquire three companies, win bids for fifteen licenses, and expand its existing operations, bringing its market capitalization to an estimated $1.5 billion. It went public in January 2002. In March 2005, Warburg sold 6 percent of its Bharti position for $560 million in a highly publicized block trade executed on the Bombay Stock Exchange in twenty-eight minutes. By the time Warburg sold its final stake to the British firm Vodafone in October 2005, Bharti's market capitalization was $15 billion, and observers estimated Warburg's total realizations at $1.6 billion.

Support for the idea that robust local markets are critical comes from the work of Leslie Jeng and Philippe Wells.[28] Looking at the evolution of venture activity over time in twenty-one countries, they found that a robust market for public offerings was a critical driver of venture activity. The number and size of IPOs affect the amount of venture capital invested. Interestingly, early- and later-stage venture capital investments are affected quite differently by the determinants of venture capital: IPOs explain less of the year-to-year fluctuations in early-stage than in later-stage investments. Presumably, while early-stage firms, being unlikely to complete an IPO for a few years, are still somewhat removed from the public markets, later-stage investors are keenly aware of and affected by the market's ebbs and flows.

It should be noted that establishing small-capitalization markets can be a tricky endeavor. The experience of the European Venture Capital

Association is illustrative. After the October 1987 decline in world equity prices, IPO activity in Europe dried up, as it did in the United States.[29] But unlike the United States, which recovered with a "hot" IPO market beginning in 1991, in Europe there was no recovery. In 1992–93, there were 432 IPOs on the NASDAQ; on European secondary markets (which had only 30 percent of the number of firms listed in the United States to begin with), there were only 31. In some countries, the decline in IPO activity was even more extreme: only five companies listed in Germany's two secondary stock markets in 1992–93; none listed in Denmark's between 1989 and 1993. Consequently, European private equity investors found IPOs of firms in their portfolios to be much more difficult to arrange, and were more likely to exit firms through the sale of firms to third parties. Trading volume in European markets for small-capitalization firms had also lagged.

One response to these problems was the creation of the EASDAQ market.[30] The European Venture Capital Association envisioned EASDAQ as a pan-European public market for growing companies—modeled after the liquid and generally efficient NASDAQ market in the United States. But despite a huge investment of time and energy, EASDAQ was a miserable failure: only several dozen firms listed on the new exchange after its launch in 1996.

In part, this failure reflected a classic catch-22: because there was so little trading on EASDAQ, it was extremely difficult and costly to get into or out of positions there. These costs deterred firms from listing on the market, which perpetuated the market's lack of liquidity. But there were other problems as well. Foremost, EASDAQ soon attracted competition from a variety of European nations, which desired that the preeminent European market for small-capitalization stock be situated in their own nation. Many national exchanges reestablished or upgraded their second-tier markets. This competition led to a "race to the bottom," in which EASDAQ was forced to lower its initially lofty listing standards and admit some rather dubious companies to try to establish itself as the leading exchange. These mishaps only further tarnished EASDAQ's luster. (Though, in fairness, it should be pointed out that EASDAQ never reached the depths of the roughly contempo-

raneous American effort to create a small-firm stock market, the American Stock Exchange's Emerging Company Marketplace. This exchange was distinguished by listing a fire-protection company headed by a convicted arsonist and another firm whose gender-bending CEO had previously been banned twice from the securities industry, once while a man and once as a woman.)[31] Ultimately, the European exchange was acquired and then ignominiously shut.

Accessing Human Capital Abroad

Another "venture capital stage setting" response involves leveraging human resources outside the nation. Venture capital is a true "people business" where personal connections are critical to overcoming the very substantial information gaps that surround these risky investments. Thus, it is not surprising that ties to entrepreneurs and venture investors working in more developed markets can often be critical.

Most countries have large pools of expatriates, which often include many individuals active in high-technology and venture capital industries abroad. These people can serve as a valuable resource along several dimensions, including roles as angel investors, as mentors to, or even partners of, local venture capitalists, and as sounding boards for policymakers.

The nation that has probably benefited the most from this resource has been India, particularly from the substantial Silicon Valley community of first- and second-generation Indians. India has an extensive diaspora, estimated to total 18 million people in 130 countries, many of whom are highly skilled.[32] As a result, they serve as a very valuable resource to local entrepreneurs: Annalee Saxenien found that two-thirds of the Indian-born entrepreneurs working in Silicon Valley advised entrepreneurs in India, while 18 percent invested in those firms.[33]

Indeed, Tarun Khanna and Ramana Nanda found that these contacts are especially valuable for Indian entrepreneurs located outside the major centers of software development.[34] Because the leaders of these firms do not have as many peers to learn from, and presumably find it harder to attract potential venture investors, contacts with sea-

soned entrepreneurs in other nations can be valuable. Khanna and Nanda found that firms with these contacts performed considerably better than others in their region, an effect that is weaker for the firms located in entrepreneurial hubs, where presumably these key inputs are more readily available.

While the Indian government has tried to encourage such ties—for instance, recruiting prominent expatriate entrepreneurs to various advisory panels—many of these connections have happened more serendipitously. Other countries have employed more aggressive efforts to catalyze these flows of knowledge and capital: for instance, in 2000, Singapore opened an office in California called connect@sg, which, among other things, sought to reach out to Singaporeans working in Silicon Valley and connect them with native entrepreneurs.[35]

A natural concern with all these steps to make raising capital from global investors easier is the danger of losing the firms. If entrepreneurs receive capital from foreign investors, they may list overseas and subsequently move their headquarters and ultimately their operations overseas. Indeed, many pioneering high-growth companies of the 1990s did get drawn inexorably to the United States, as part and parcel of listing on the then-dominant NASDAQ market. Today, the emergence of viable exchanges elsewhere has reduced this problem, but firms continue to move to more fecund territories.

But the experiences of many nations over the past decade suggest that even if such defections do occur, the success of an entrepreneurial company still has many positive effects on the country where it began. These include

- the encouraging effect that the example has on would-be entrepreneurs,
- the visibility that the firm—and local companies more generally—gain with global investors (thus encouraging further investment), and
- the likely continuing involvement by the transplanted entrepreneur with the local economy as a mentor to entrepreneurs or an angel investor.

Final Thoughts

In their eagerness to jump-start entrepreneurial activity, governments frequently race to hand out capital. This is equivalent to serving the main course before setting the table, and unlikely to lead to a successful dinner party.

This chapter has emphasized the importance of steps that help entrepreneurs and facilitate global investors. Failing to focus on creating favorable conditions for entrepreneurs will lessen the demand for the funds that are made available. And if global investors do not find conditions attractive, the experience and sophistication needed to create a world-class venture industry are unlikely to be present.

This brings us to the final category of policies: direct interventions to increase the supply of capital for entrepreneurs and venture capitalists. These efforts have differed along many dimensions:

- *The parties providing the capital.* In many instances, government officials have handed out the funds themselves. In others—aware of the distortions that can creep in—academic institutions or nonprofits have been delegated to provide the funding. In yet others, private sector organizations have been provided capital to give in turn to entrepreneurs.
- *The amount of funding.* In some cases, the public bodies have provided matching funds only; in others, the entire amount needed has been provided.
- *The structure of the funding.* In some cases, the funding has been in the form of outright grants; in other cases, governments have expected to receive their capital back or a return on their investments.
- *The "strings" attached to the capital.* The extent to which the government contracts have constrained the activities of these firms and funds has varied substantially.
- *The relationship between the government and the firm or fund receiving the funding.* In many cases, the government has few mech-

anisms in place to oversee the group once the capital has been provided; but in others, there is much more intensive monitoring.

Direct interventions present far more substantial challenges to public officials than the previous two types of initiatives we have looked at. There is always a danger of spending public resources unwisely: for instance, a tax subsidy for capital gains may not generate enough economic activity to make up for the revenue loss. But the pitfalls are considerably larger as the government moves from "scene setting"—from policies that facilitate the demand for venture capital—to directly providing capital itself. In the next two chapters, I will highlight the several challenges that policymakers face, and the disasters to which, far too often, poorly designed programs have led.

CHAPTER 6

How Governments Go Wrong: Bad Designs

The frequent failures among public programs to stimulate entrepreneurship and venture capital suggest that many pitfalls face these efforts. The stark truth is that many more initiatives have been unsuccessful than successful. One benefit that policymakers today have, however, is that they can learn from the mistakes made in earlier years, and adjust their programs accordingly.

Readers may wonder how this book's recommendations have been arrived at, given my cautions about the early stage of our knowledge. Indeed, not enough work has been done on how to structure entrepreneurship programs to ensure their greatest effectiveness and to avoid political distortions. But as I discuss later in this chapter, a number of previous programs appear to be predicated on premises that are fundamentally at odds with what is known about the process of financing entrepreneurial firms.

The next two chapters will highlight the critical challenges these initiatives face, drawing on research and history. In this chapter, we'll look at conceptual problems. All too often, public programs incorporate fundamental errors that are a death sentence for a program before it even starts. These failings can be divided into designs that do not reflect what the entrepreneurial and venture process is all about, and those that seek to tell the market what to pursue, rather than listen to its needs. In the chapter 7, we will consider some of the key errors made when programs are implemented.

Failing to Understand the Venture Market

If public programs are indeed to create an environment in which new ventures can succeed, they must first understand the ways in which the market identifies and funds high-risk, high-potential entrepreneurs. All too often, programs have incorporated assumptions that may have sounded plausible when proposed within the halls of government but are utterly at odds with the manner in which venture markets really work.

In this section, I will highlight three common ways in which public efforts misunderstand the working of venture markets.

Timing

The first common mistake relates to the length of the programs. Democracies worldwide are shaped by the ebb and flow of election cycles. This inevitably leads to a short-run orientation. And even leaders in office for life are often anxious to display progress and look for quick fixes.

But building a venture capital industry is a long-run investment, which takes many years until tangible effects are realized. To cite one example, historians date the birth of the modern U.S. venture capital industry to 1978, a full twenty years after the enactment of the SBIC program. (The gestation period in the United Kingdom was even longer.) While it may be possible to build a vibrant entrepreneurial sector more quickly today (as we will discuss below, the globalization of the industry has some dramatic implications), this is not a process that can be accomplished in a few years.

As a result, an entrepreneurship or venture capital initiative requires a long-run commitment on the part of politicians and public officials. The one certainty is that there will be few immediate returns. If programs are abandoned after a few months or years, they are highly unlikely to bring any benefits. There has to be a commitment to be undaunted by initial failures—for example, the low rate of return that early publicly subsidized investments or funds garner—and instead to fine-tune programs in the face of early discouragements.

An illustration of the need for commitment is the experience of Ma-

laysia. To their credit, Malay policy leaders recognized early on the importance of encouraging entrepreneurial activity. In the 1970s, Malaysia began its transition into a middle-income country by gradually broadening its economic activities and switching from the production of raw materials, such as rubber and palm oil, to the manufacture of electronics. By the early 1990s, the nation's leaders recognized that Malaysia's future growth depended on encouraging innovation.

In 1993, the Malaysian Industry-Government Group for High Technology (MIGHT) was launched. This independent, nonprofit organization aimed at facilitating partnerships between industry and government in high-technology industries. It became an active advocate for efforts to promote high-technology entrepreneurship: for instance, the Multimedia Super Corridor, encompassing an area of nearly 300 square miles, was started in 1995 and was explicitly modeled after Silicon Valley.[1] The importance of this effort was reflected in the comments of the most senior levels of the Malay government: for instance, in 1999, Tan Sri Dr. Omar Abdul Rahman, the joint chairman of MIGHT and president of the Malaysian Academy of Sciences, pointed to the success of Singapore in promoting high-technology entrepreneurship and argued that there was a "need for a paradigm shift."[2] This vision was largely incorporated into Malaysia's five-year plans in the late 1990s and 2000s.

However worthy the initial vision, its implementation was marked by inconsistency that largely defeated the government's good intentions. Consider, for instance, the efforts in biotechnology.[3] In 2001 the Malaysian prime minister, Mahathis Mohamad, set in place plans to boost Malaysia's biotechnological capacities through the establishment of a BioValley: Malaysia targeted biotechnology (like almost everyone else!) as critical to the nation's development. The BioValley itself was intended to nurture local research and medical discoveries and enhance commercialization. At the core of the 2,000-acre site would be three research institutes focusing on genomics and proteomics, agriculture, and pharmaceutical technologies, which would share resources. The valley was projected to be fully operational in 2009, and would also have commercial, education, recreation, and residential facilities, with a total public expenditure exceeding $150 million.

Inauspiciously, the BioValley was built on the site of Entertainment Village, Malaysia's failed attempt to create a version of Hollywood. Reflecting the absence of advance planning or follow-through, this expensive real estate development lay empty. In an echo of the earlier failure, by April 2004 only three companies had signed contracts to locate in the BioValley, and by 2005 the empty halls of the BioValley and unused equipment had earned the place the nickname the "Valley of Bio-Ghosts."

What went wrong with this effort? In part, it reflected the lack of planning highlighted above. Perhaps blinded by the success of Singapore's Biopolis, the Malaysia effort's leaders apparently did not ask whether biotechnology firms wanted to locate in the BioValley. The lack of properly trained talent to operate research facilities, the uncertain nature of intellectual property rights in Malaysia, and the absence of a national tradition of high-technology entrepreneurship all weighed heavily in the mind of private firms considering this facility. Rather than engage in dispassionate analysis of the likelihood of attracting tenants, the project's leaders seemed to follow the mantra of the movie *Field of Dreams*: "If you build it, they will come." As we have seen, in the realm of growing venture activity, this strategy is rarely enough.

The inconsistencies of Malaysian policies also led many biotechnology firms to turn elsewhere. For instance, not long after breaking ground on the center, the Science, Technology and Environment Ministry announced the establishment of biotechnology satellite hubs in all of the country's states by 2006, with each state concentrating on a particular scientific field.[4] These changes, as well as the shroud of secrecy under which the project was organized, led many to wonder about the government's commitment to BioValley. (This kind of push to be "fair," to ensure that every region gets a "piece of the action," has defeated many similar efforts.) Then, in April 2005 the nation's biotechnology policy was revisited. The plans for the BioValley were scaled down, in favor of institutes elsewhere and focused on other industries, tax breaks, and matching incentives.

Perhaps not surprisingly, firms participating in other Malay programs also saw dizzying changes of policy and inconsistencies, which reduced their effectiveness. For instance, the Advanced Microchip

Design and Training Center project was launched in 1999, with a vision of establishing fifteen semiconductor design houses employing 5,000 designers by the end of 2003.[5] An important element was to be intensive training of local students to prepare them for state-of-the-art work. The government enthusiastically supported this effort, pointing to its fit with the broader goal of promoting information technology. But by 2003, the government—apparently discouraged at the slow pace of progress—had largely abandoned the project, and ended up in litigation with its various foreign partners. Similarly, the Malaysian Technology Development Corporation underwent numerous shifts of strategy in the face of severe write-downs, continuous losses from 1999 to 2004, and corruption charges against its most senior executive.[6]

This experience is not unique to Malaysia. A recent evaluation by Scott Wallsten looked at counties in the United States that had been the site of publicly funded science parks, and compared them to similar counties that did not have such facilities.[7] An initial comparison suggested that science parks had little impact: for every park such as the Center for Advanced Technology at Colorado State University, which saw a surge in venture funding in the years after its establishment, there is a Alturas Technology Park, in Moscow, Idaho, where the growth rate in high-technology employment and venture activity in the five years after it was built lagged behind that of peers without such a park.

It might be objected that this comparison isn't really fair. After all, in many cases, a key reason that the government decides to spend precious public funds on these projects is that the area is in trouble economically to begin with. Not surprisingly, science parks tend to be located in counties that are losing jobs. But even after controlling for economic conditions, the basic pattern remains: these parks have no measurable impact, positive or negative, on venture activity or high-tech jobs more generally.

Much of the blame for the failures of these parks must be laid at the feet of the short-run orientation of many government leaders. All too often, leaders assume that a science park project, once completed, will solve problems immediately. One frustrated park director compared the state legislature—which cut off funding for his center after "not

enough had happened" within two years of its opening—to a child who kept digging up the ground where he had planted seeds because he was frustrated that the flower was not yet blooming.[8] A short-term outlook is fundamentally at odds with what we know about the entrepreneurial process.

Even if programs are given a long-run mandate, they are often structured in a way that makes it impossible for them to carry out their mission. Consider, for instance, the experience with promoting entrepreneurship and venture capital in Finland.[9] The Finnish effort has relied on two institutions:

- The Finnish Industry Investment Ltd (FII) was begun in 1995, with the objective of assisting venture funds investing in early-stage companies. It invests directly in these funds, frequently serving as the lead, or cornerstone, investor. It also directly finances entrepreneurs with promising business plans.
- The Finnish National Fund for Research and Development (abbreviated Sitra) has been involved in making government investments in venture capital since 1967. While it originally focused on overseas funds, it also increasingly focused on early-stage funds and in giving money directly to early-stage domestic entrepreneurs.

The overlapping roles of these two agencies might well have given policymakers pause. But these two institutions also shared another, considerably more problematic feature: financial "ground rules" that were inconsistent with their basic missions. On the one hand, FII operated under the rule that its investments be undertaken profitably. This requirement has been interpreted by the bureaucracy as meaning that its returns *each year* were expected to be above the inflation rate. Sitra, on the other hand, was expected to be an "evergreen" fund, with the pace of new investments limited to whatever the fund gets from selling its proceeds.

These requirements seem quite out of line with the funds' ultimate objectives of addressing failures in early-stage venture capital markets. As we have discussed in chapter 2, venture markets are intensely cycli-

cal with booms and busts. This is particularly true of early-stage investing. To expect a steady flow of profits, as the government does from FII, is not realistic. This requirement appears to have led FII to emphasize later-stage investing, in the hope that a more steady profit flow would allow the fund to remain in compliance with its ground rules. Not only is this hope probably ill-founded, but the shift has meant the program has moved away from the mission that the legislators assigned it.

Sitra's requirement of financial self-sustainability has also been counterproductive. In particular, the fund had ample capital to throw into the overheated market of 1999–2000, when the Finnish market was exploding and few entrepreneurs with a decent (or not so sensible) idea were languishing unfunded. By 2001 and 2002, by the time that the Finnish venture market was prostrate, Sitra had no outflows that would allow it to fund anyone.

When enacting these two programs, Finland's parliamentarians realized they needed long-run investments to overcome market failures. But in the design of these programs, seemingly reasonable requirements—who can be against self-sufficiency?—ended up undoing their good intentions. As a result, the ability of these initiatives to address the societal problems that legislators had identified was profoundly compromised.

Given the long span involved in creating a vibrant entrepreneurial and venture capital culture, a short-term perspective (or rules that inadvertently introduce such a point of view) is likely to be a "kiss of death." Political leaders need to appreciate that quick returns are unlikely to appear. If short-term fixes are the only kind of successes being sought, it is best not to undertake a pro-entrepreneurial program at all.

Sizing

The second common mistake relates to the sizing of the program. Either too small or too large an initiative can pose profound difficulties.

The problem with too small a program, of course, is that it won't make much of a difference. For instance, some public programs have only invested a few million dollars. Such an effort is very unlikely to make an impact on a large and diverse economy. Few venture capital-

ists or other investors will learn about the program, and the possibility that such funding will serve as a "stamp of approval" to others will be remote. The companies or groups receiving the funds are unlikely to have enough capital to move on to the next level. (While the minimum size varies by country and sector, conversations with practitioners suggest $60 to $75 million is the smallest size for an effective venture fund.)

Yet in many cases, the public sector has created programs that are far smaller.[10] In 1991 Peter Eisinger found that the average size of twenty-nine venture capital programs begun by twenty-three U.S. states was $6.5 million. By way of contrast, the typical venture fund begun that year was $31 million. In many cases, governors and legislators sought to promote the state's economic development, but at the same time to have as little impact as possible on the meat and potatoes of government: funding schools, building roads, and so forth. With such limited money—and often inflated promises about the impact these funds would have—the odds that they would fulfill expectations were remarkably low. Indeed, when Eisinger returned twenty months later to check on the state funds' status, over a third had already been dissolved.

Nor is the creation of too small funds a uniquely American phenomenon.[11] For instance, the European Union has launched numerous efforts to encourage the financing of new firms. Typically, they have followed a depressingly familiar pattern: even if the intention of the Eurocrats is to create reasonable-sized funds, by the time every country, or every region in each country, gets its "fair share" of the government's money, the pie has been sliced in very thin pieces indeed. The European Seed Capital Fund Scheme is one telling example. As Gordon Murray points out, these funds (which typically had under two million euros in capital) were so undercapitalized that even if they did nothing beside pay for the salary of an investment professional and an administrative assistant, rent for a modest office, and travel, and never invested a single dollar, they would run out of capital long before their assigned ten-year life was up. Moreover, with so few euros to disperse, the investments they could make were tiny. Certainly, they were insufficient to get the typical entrepreneurial company to the point where it

could go public, or even, in many cases, to the point where it would be interesting to a corporate acquirer. For a number of groups, their best hope of achieving any return from their investments was to sell the stakes back to the companies they had bought them from. This is hardly a way to achieve the European Commission's goal of providing capital to needy entrepreneurs!

On the other hand, if public programs become too large, they can crowd out, or discourage, private funding. Public funds may become so extensive that they discourage venture capitalists from investing in a given market, because all attractive opportunities have been funded already by the public funds.

The experience of the Canadian Labor Fund Program in the 1990s provides a good illustration of this latter danger.[12] A number of provincial governments, seeking to encourage venture capital, established these funds in the 1980s and 1990s. But in doing so, they adopted some very peculiar elements:

- Rather than encouraging institutional investors and sophisticated high-net-worth investors—who are the dominant investors in venture funds around the world—these funds were designed for the "little guy." Individual investors received exceedingly generous tax credits—they received a credit of 20 percent of the amount they invested in these funds when paying their federal taxes, and another 20 percent credit in many provinces—but the benefits were capped after a few thousand dollars.

- Reflecting the political horse-trading that is part and parcel of the democratic process, the Quebec parliament (which enacted the first of these funds and whose legislation was widely imitated in other provinces) decreed that these funds would be managed by labor unions. Predictably, unions were unfamiliar with the venture process, leading to a "rent-a-union" dynamic where outsiders curried favor with unions to get permission to run their funds. Not surprisingly, the unions often turned to cronies and fast-buck operators rather than experienced investors to manage the funds. There were no incentives for the unions to hire top-tier managers,

or any provision for government program managers to step in if a problematic manager was hired.

- The funds frequently had wide-ranging, somewhat muddled mandates, which ran from generating financial returns to providing labor education to promoting local economic development.
- Tight limits were put on how long the funds could "sit" on the money they raised. For instance, in Ontario, one-half the funds had to be invested in the first year, and 70 percent within two years, whether there were attractive opportunities or not.
- Numerous costly reporting requirements were imposed on the funds and were compounded by the presence of many individual investors.

Despite these design imperfections, the amount of capital investors put into labor funds grew spectacularly: the investment pool climbed from $800 million in 1992 to $7.2 billion in 2001, while private independent funds grew from $1.5 billion to $4.4 billion over the same period (all figures in billions of 1992 Canadian dollars).

But the funds that were established and raised capital were far from inspiring. For instance, the Canadian Football League Players' Association sponsored the Sportsfund.[13] Joel Albin, a former vice president of the Bank of Montreal, was the leading spirit behind the venture. He candidly described his motivations:

> When I saw what the labor-sponsored vehicle offered with the tax breaks, I thought, "Geez, if I can structure it in a way that I could get my investors those tax breaks, then why not?" It would be sort of negligent not to as a corporate finance person.

This effort attracted so much interest it had to be closed off to new investors. Perhaps the investors were more swayed by the glitzy launch party, which featured the fund's advisors—Canadian professional sports heroes and Olympians—than by Albin's lack of investment experience. But after disappointing investments in such ventures as the

World Pitch & Putt Corporation (which promoted an Irish variant of golf, where no hole is more than 300 feet from the tee) and a short-lived Broadway musical based on *Jane Eyre*, the fund lost more than half its value, and investors fled.

The consequences of this poor design are not surprising. The performance of labor funds lagged far behind both private and public equity indexes in the United States and Canada. The apparent disconnect between poor results and the large amount raised presumably reflected the power of the tax benefits the labor funds enjoyed, as well as uninformed investors.[14]

The effects of the labor fund initiative have been analyzed by Douglas Cumming and Jeffrey MacIntosh.[15] They look at the level of venture capital funding in each province, and see whether the presence of the labor fund program enhanced or reduced the amount of funding. They show that the adoption of the federal legislation seems to be associated with a reduction, not an increase, in overall venture activity. But this analysis raises concerns: in particular, to what extent did the federal legislation coincide with some other change that made Canadian venture investing less attractive than that in the United States (for instance, the proliferation of pioneering Internet companies in California)?

In the second part of their analysis, Cummings and MacIntosh exploit the fact that the program was not begun or ended in all provinces at once: rather, it was phased in and out at various times, reflecting Canada's decentralized government. In this way, they are able to control—at least roughly—for the changing investment climate, and look at the consequences of the adoption of the program specifically. Here the results are indecisive. Certainly there is no evidence that the program boosted the aggregate amount of venture spending in each province.

While this analysis is suggestive, by focusing on the aggregate amount of venture investments, the authors may be missing the larger picture. Conversations with independent Canadian venture funds indicate that they found themselves during these years competing against these uninformed investors, who were in many cases willing to commit capital at huge valuations. Many of the independent groups, con-

vinced that they could not generate profitable returns in the Canadian market, shifted (at least temporarily) to investing in the United States instead. Thus, the problem may have been less with the aggregate amount of funding during these years, than with the quality of the groups providing the funding to the entrepreneurs.

Evidence consistent with this view is presented in a recent evaluation of the Canadian program by James Brander, Edward Egan, and Thomas Hellmann, which looks in depth at what happened to individual companies participating in it.[16] The authors find that not only were the companies backed by the labor funds less financially successful, but they underperformed on other measures that might have also been goals of policymakers. The fund-backed firms were less likely to be issued patents or perform R&D, which suggests that they were less innovative than their peers. (The authors control for the fact the tendency of firms in different industries to file for patent protection varies.) Nor is there any evidence that these firms were any better at expanding employment or introducing more competition to Canadian industry, two other justifications that have been offered for the program. In short, by flooding the market with funds, the program appears to have accomplished neither its financial nor broader social goals.

In all fairness to the Canadians, the Labor Fund program was far from unique in having these design flaws. A similar picture emerges from studies of European initiatives. Dozens of national and Europe-wide initiatives in recent decades have sought to promote funding for entrepreneurs and venture capital funds. To cite just one of many examples, in 2001, the European Commission provided more than two billion euros to the European Investment Fund, making it overnight Europe's largest venture investor. This amount is very significant relative to the roughly four billion euros that were invested by European venture funds in that year.

The motivation of these efforts was again laudable. Europe has seen a low level of venture activity for many decades. Figure 6.1 illustrates the ratio of venture investment to gross domestic product for leading industrialized nations, and highlights the low level of activity across Europe.[17] These low levels reflect the miserable returns that European

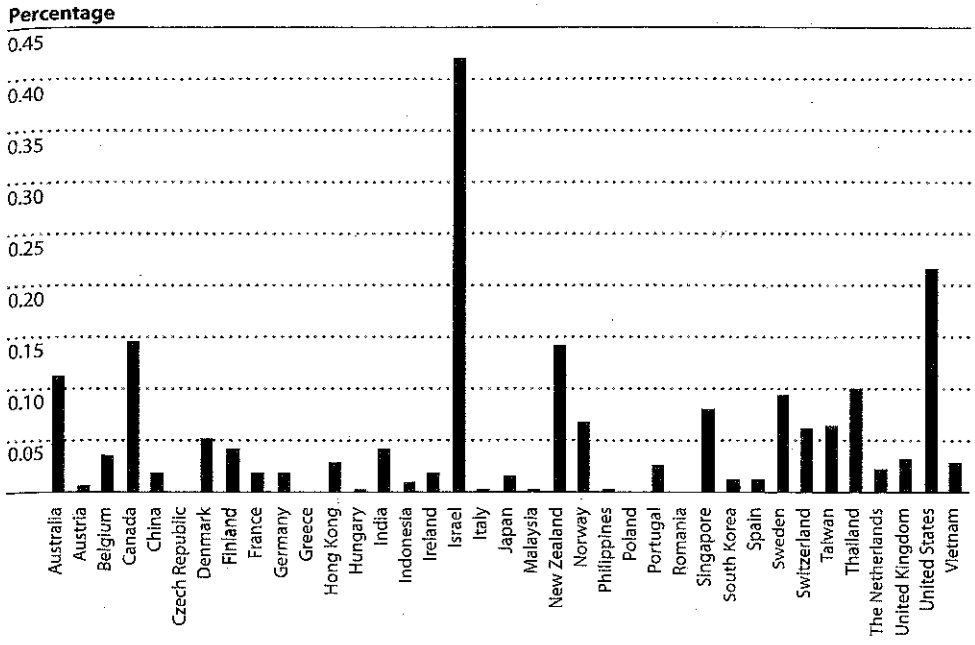

Figure 6.1. Ratio of venture capital investment to GDP, 2007

venture investments have yielded. Venture Economics' calculations suggest that from the beginning of the industry through the end of 2007, the average European venture fund has had an annual return of minus 4 percent: hardly a number to warm the hearts of investors![18] (The comparable number for U.S.-based funds over the same period is 16 percent.) Thus, policymakers have argued, the low levels of fund-raising and low historical returns create a need for public financing.

But just as in the Canadian case, the huge amount of funds provided at the European, national, and regional levels may be having a perverse effect. As Wim Borgdorff of the leading European fund-of-funds AlpInvest has noted, "The unfair competition from public money might well have a disastrous unintended consequence by inducing many private funds with stricter financial criteria to leave the European venture capital industry altogether."[19]

Support for this claim comes from a 2006 paper by Marco Da Rin, Giovanna Nicodano, and Alessandro Sembenelli, which examines the

level of venture capital funding across fourteen European countries over the past two decades.[20] The authors look at the extent to which venture capital is an important source of financing for private firms. The analyses suggest that many factors determine the level of activity. Particularly harmful are high rates of taxation, the presence of legal hurdles to entrepreneurship, and the absence of stock markets geared toward entrepreneurial companies characteristic of many countries. The supply of funds from the government, however, has no significant impact. Once again, the data suggest that for every dollar being handed out by a government-sponsored program or fund, private investors put a dollar less into the sector. And if the most skilled and knowledgeable investors are on the private side, the quality of investment selection, advice, and oversight in this market may decline markedly as a result of public interventions. To put it another way, the low returns in the European venture markets may be as much a *consequence* as a cause of the massive public interventions in these markets.

This problem is not dissimilar from the difficulties facing the few pioneering venture funds operating in Africa over the last decade. There are so many governmental and quasi-governmental financing sources that would be satisfied with simply getting their capital back that it is next to impossible for private investors to put their funds to work. The relatively few promising entrepreneurs find the venture funds' need for a 25 percent or 30 percent return on their investment unsatisfactory, preferring to take funds from public sources that do not demand a market rate of return. Once again, seemingly well-intentioned public programs can stymie the development of a crucial intermediary. Many other illustrations of this phenomenon, where a publicly subsidized competitor drives out private investment, can be found on other continents as well.[21]

Flexibility

A third point is that government officials must appreciate the need for the flexibility that is central to venture capital investment. Venture capitalists make investments in young firms facing tremendous uncertainties in technology, product market, and management. Rather than undertaking the (often impossible) task of addressing all the uncer-

tainties in advance, they remain actively involved after the investment, using their contractually specified control rights to guide the firm. Changes of direction—which often involve shifts in product market strategy and the management team—are an integral part of the investment process. Far too often, public administrators view these shifts not as natural evolution, but as troubling indications that awardees are deviating from their plan.

The consequences of inflexibility can be seen in the two largest venture programs run in the United States over the past fifteen years. The U.S. Department of Commerce's Advanced Technology Program (ATP) sought from 1990 to 2007 to support technology-based projects conducted by American companies and industry-led joint ventures. In its first eight years, 36 percent of ATP funding went to small businesses, with an additional 10 percent going to joint ventures led by small businesses.

The regulations governing ATP stated that the firms funded be "precommercial." The rationale for this policy was easy to understand: the drafters of the law wanted to support young companies that would find it hard to raise funds elsewhere. But note, demanding that companies be precommercial is very different from encouraging early-stage investing. As numerous scholars of entrepreneurship have pointed out, successful early-stage companies are almost immediately focused on interacting with customers and refining prototype products, despite their young age.[22]

The consequences of the ATP's regulations are not hard to anticipate. For instance, one very promising awardee, Torrent Systems, completed preproduct R&D ahead of schedule.[23] But instead of rewarding the firm, the ATP forced Torrent to choose between giving up the unused money and expanding its R&D into nonessential areas where it did not have commercial activity. Torrent decided to pursue a rapid-commercialization strategy, including an alliance with IBM. ATP promptly impounded the remaining funds. Torrent wasn't anticipating another round of venture financing for a number of months, so its executives now had to scramble to replace the lost financing. All of the events—along with threats from ATP to shut down the company and subject it to an exhaustive audit—consumed immense amounts of Tor-

rent's limited time and money. As a result of the government's lack of flexibility, Torrent paid a heavy penalty for its success.

Another example can be drawn from the Small Business Innovation Research (SBIR) program, which sets aside 2.5 percent of all federal external R&D expenditures (the research not directly undertaken by government scientists) to fund small, high-tech businesses. In recent years, the program has invested more than $1.5 billion annually in entrepreneurial technology-intensive firms.[24]

When the SBIR program was enacted, a major concern was ensuring that the awardees would indeed be American-owned small businesses, and not foreign or large companies masquerading as eligible firms. As a result, the legislation required that (*a*) the firms and their affiliates receiving the awards have no more than 500 employees, and that (*b*) the business be 51 percent owned by individuals who were U.S. citizens or permanent residents. These rules governed the program for its first two decades.

In January 2001, however, an administrative law judge deep in the bowels of the Small Business Administration interpreted the law differently, essentially making up a new policy. Companies in which venture capitalists owned more than 50 percent of the equity, the judge ruled, should not be considered as complying with these rules. In particular, because venture capitalists owned a majority of CBR Laboratories of Boston, the firm was not able to receive a SBIR award.

This ruling was profoundly illogical. As we have seen in chapter 3, venture capitalists fund many of the most innovative start-up firms, the bulk of which would now be excluded from the program. Moreover, venture ownership is fundamentally different from the large corporations that the congressmen enacting the program feared would grab the lion's share of the grants: it is a temporary state, as the venture fund is typically required by its operating agreement with investors to sell its stakes within a decade or less of the initial investment. Finally, in many industries, such as biotechnology, raising venture financing is not a choice: the substantial information gaps and intense financing needs mean that sophisticated investors are a necessity. About the only people satisfied with this ruling were hardcore small business lobbyists such as the American Small Business League, who characterized crit-

ics of the change as "well-heeled investors [attempting] to hijack billions of dollars in federal contracts earmarked for legitimate small businesses."[25]

As a result, many biotech companies have since been denied SBIR grants or have opted not to apply. We'll never know what would have happened had they been able to pursue their research. In other cases, the effects were more evident, as with Intronn, a Maryland-based company developing a promising therapy for cystic fibrosis by "reprogramming" damaged genes. The firm, started by an unemployed pathologist in his living room, used a grant from the National Institutes of Health to go from three to sixteen employees, as well as to attract venture funding. But when the government learned the firm had sold a majority stake to venture capitalists, it pulled SBIR funding. As a result, the firm had to lay off employees and dramatically scale back its research efforts. It ended the cystic fibrosis project.

In response to the ensuing uproar, the Small Business Administration in 2005 issued a new ruling, which seemed (the language is incredibly opaque!) to allow companies with a majority stake held by venture investors to take part in the program once again, as long as the venture firm itself employs fewer than 500 employees. But the SBA's staffers have continued to do all they can to frustrate the participation of venture-backed firms, apparently convinced that these firms are skirting the rules. One firm's status as a small business was recently rejected, for instance, not because it had too many employees (it had seven), nor because the venture organization funding it did (it had a total of nine employees), but because the sum of the number of employees working for the venture firm and every firm in its portfolio exceeded 500![26] This kind of madness reflects a deep failure in understanding how entrepreneurial finance works.

Inflexibility manifests itself in many ways. One of the international development banks adopted a mandate of trying to boost entrepreneurship in developing countries by investing in the most promising venture funds. As the program evolved, the bank's senior management had a brainstorm: they could better put more money to work, and thus better fulfill their mission, if they co-invested alongside their venture funds in promising companies. This insight translated into a rule that

all new investments in funds include a requirement that the bank be offered a chance to co-invest in each investment made.

While once again, the intentions of the policy's drafters may have been innocent, an inflexible policy had troubling consequences. The most sophisticated developing world venture organizations took one look at the policy and decided not to ask the development bank to invest in their next fund. They had no interest in facing the delays, bureaucrat disruption, and loss of flexibility associated with the proposed co-investment mandate. Meanwhile, less successful groups, desperate to raise money at whatever the cost, acquiesced to the mandate. But these were not the funds that the bank was seeking to support! Thanks to an ill thought-through and inflexible mandate, the bank's mission of encouraging the best developing-country-based venture funds was distorted.

In short, public venture capital initiatives should not be hobbled by excessive regulation. However well intentioned, it almost inevitably limits the freedom of venture capitalists and the entrepreneurs they fund to pursue the most attractive opportunities.

Not Listening to the Venture Market

A second problem relates to the way in which public funds are allocated. Far too often, the decisions are distorted by a lack of understanding of how the market works or by political rather than economic considerations. By requiring that matching funds be raised from the private sector, the dangers of uninformed decisions and political interference can be greatly reduced.

We've already seen so many examples of well-intentioned but uninformed leaders making boneheaded decisions that we need not belabor the point! But it is worth saying a few more words about agency problems that can distort public efforts to help entrepreneurs and venture capitalists.

As we noted above, an extensive literature in political economy and public finance has emphasized the distortions that may result from government subsidies as particular interest groups or politicians seek

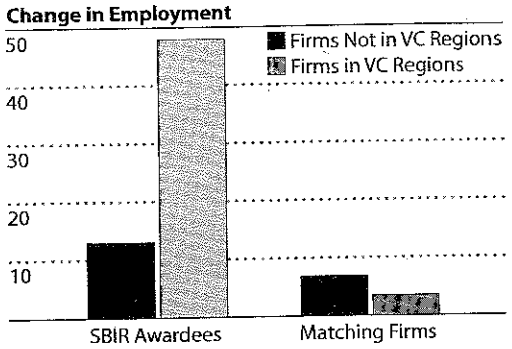

Figure 6.2. Change in employment among SBIR awardees and matching firms

to direct subsidies to benefit themselves. The theory of regulatory capture suggests that direct and indirect subsidies will be secured by parties whose joint political activity, such as lobbying, is not too difficult to arrange.

These distortions may manifest themselves in several ways. One common impetus is the pressure to "spread the wealth": to ensure that every region has its "fair" share of venture subsidies. But as we have seen earlier, entrepreneurship is an intensely unfair activity: there are powerful forces that lead firms to cluster in particular places. Thus, in many cases, much of the impact is diluted as funds that could be very helpful in a core area end up where they aren't useful.

The SBIR program, the largest public venture program in the United States, provides an illustration of this problem. The effect of a fairness policy can be seen by comparing the performance of program recipients with that of matching firms; see figure 6.2, which compares the growth of SBIR awardees and matching firms.[27] The figure shows that the awardees grew considerably faster than companies in the same locations and industries that did not receive awards.

Unfortunately, underneath these positive results lie some intense political pressures and conflicting interests. For one thing, congressmen and their staffers have pressured program managers to award funding to companies in their states. As a result, in almost every recent fiscal year, firms in all fifty states (and indeed every one of the 435 congressional districts) have received at least one SBIR award.

Figure 6.2 also highlights the consequences of such political pressures. In particular, it contrasts what happened to the workforce size of SBIR awardees located in regions characterized by considerable high-tech activity (that is, a firm in the same ZIP code received at least one independent venture capital financing round in the three years before the SBIR award) and those elsewhere.

It reveals that in the ten years after receipt of SBIR funding, the workforce of the average award recipient in a high-tech region grew by forty-seven, a doubling in size. The workforces of other awardees—those located in regions *not* characterized by high-tech activity—grew by only thirteen employees. Though the recipients of SBIR awards grew considerably faster than a sample of matched firms, the superior performance, as measured by growth in employment (as well as sales and other measures), was confined to awardees in areas that already had private venture activity In the name of geographic "diversity," the program funded firms with inferior prospects.

In addition to the geographic pressures, particular companies have managed to capture a disproportionate number of awards. These "SBIR mills" often have staffs in Washington that focus only on identifying opportunities for subsidy applications. This problem has proven difficult to eliminate, as "mill" staffers tend to be active, wily lobbyists. Moreover, "mills" commercialize far fewer projects than those firms that receive just one SBIR grant. Though a *single* SBIR grant does seem to encourage performance in awardee firms, the program clearly still has some work to do in eradicating waste and distortions.

Yet another distortion is when policymakers make decisions based on "buzz," or incomplete information. One study determined that forty-nine of the fifty U.S. states started major programs to promote the biotechnology industry, in hopes of creating a cluster of activity.[28] Realistically, only a handful of these states had the base of scientific resources and the supporting infrastructure (e.g., lawyers versed in biotechnology patent law and financing practice) to support a successful cluster, so the bulk of these funds were wasted. When these programs did support a promising firm, in many cases it rapidly moved to a region more conducive to biotechnology entrepreneurship.[29]

But how, then, can governments be smarter about which sectors to

back? This is an especially important goal given that in each new industry there are typically only a few "clusters," or centers of activity. We might be skeptical about whether smart selection is a feasible task for governments, given how little success academics—who have been studying this question for decades—have had in predicting winners. The topic remains actively under research, with little clear consensus. (It is true that there are some clues in the literature: for instance, many observers agree with the conclusions of Lynne Zucker and coauthors, who attempt to disentangle the drivers of the growth of the U.S. biotechnology industry.[30] They argue that the critical element to jumpstart the industry in a given region was the presence of leading academic scientists. Venture funding and the formation of new firms seemed to follow from their presence.)

Certainly, in some instances, government officials have targeted the right sectors at the right time. To cite one example, in just fifteen years, Taiwan moved from having almost no experience in high-technology industries to being a leading producer of hardware for nearly every major computer vendor in the world.[31] Taiwan's success in the computer industry was largely due to a coordinated government strategy to support private entrepreneurship by a large number of small, flexible, innovative companies.

Taiwan's industrial leaders saw that the island was well suited to the international personal computer industry. The open architecture created by IBM in the personal computer (PC) industry lowered the barriers to entry and created a market for standardized components and peripherals. In the earlier mainframe computer era, smaller companies were largely shut out of the market by IBM's market dominance and its strategy of producing a large share of components and peripherals in-house. The PC revolution created a new industry structure, with opportunities for many companies to compete in niches in this fast-growing market. A company could build a better or cheaper component, based on openly available technical standards, and find a buyer for it. Taiwan's leaders also saw that the island's existing industrial infrastructure, which extended from basic parts and components into the plastics, metalworking, chemicals, and electronic industries, would greatly enhance the strength of firms.

Taiwan's leaders put in place a government policy that has been aimed at complementing and supporting, rather than replacing, the efforts of the private sector. There has also been an effective flow of information between the public and private sectors. Information from the private sector has enabled government to make policies that address the needs of industry, such as facilitating technology transfer and funding research that the private sector could not afford. Government institutions have provided industry with information on new technologies and market opportunities. Government has also provided for the development of critical human resources needed by industry, emphasizing the production of engineers and computer professionals, the training and certification of existing staff, and the recruitment of high-level, experienced overseas Taiwanese to help develop its information industries.

But Taiwan is the exception rather than the rule. The vast majority of efforts by the public sector to target particular industries seem to have been far less successful. And the academic literature has been not much better in creating workable algorithms to identify which sector is likely to grow at which time. If dozens of Ph.D.s poring for years over econometrics models with mountains of historical data have been unable to show how to target industries, how can the typical government leader identify good prospects in a compressed time period and with limited information?

But there is a way to address this problem at least partially. The most direct way is to insist on matching funds. If venture funds or entrepreneurial firms need to raise money from outside sources, organizations that will ultimately not be commercially viable will be kept off the playing field. In order to ensure that these matching funds send a powerful signal, the matching requirement should involve a substantial amount of capital (ideally, one-half the funding or more should be from the private sector).

An illustration of this approach is the New Zealand Venture Investment Fund (NZVIF).[32] In late 1999 the newly elected prime minister, Helen Clark, realized that New Zealand faced a fundamental problem and needed to change. In particular, she was concerned that New

Zealand's economy depended critically on the production and exporting of commodities. The nation's position in the knowledge-based industries was weak, and its living standards were steadily falling relative to the other major developed nations.

A critical area that her government targeted was enhancing innovation, and encouraging venture capital was a critical aspect of this goal. In light of limited activity in the local market, the government sought to accelerate the growth of the New Zealand venture capital market through co-investment with private investors and related market development activities. After a careful review of other models, the government adopted a so-called fund-of-funds approach, whereby it made investments in private venture capital fund managers (see figure 6.3 for a schematic of a fund-of-funds approach).

Prior to any investments being made, NZVIF was structured as a stand-alone company, which ensured the government could distance itself from risk and liability for the investments made. This approach also ensured distance and independence from decisions about appointment of venture capital fund managers and from individual investment decisions.

These investments were structured as equity (to minimize possible distortions) and could be bought out by the investors. Government investments in the funds were on the same terms as those of private investors, except that each fund was provided with an option exercisable up to the end of the fifth year of the fund to buy out the NZVIF investment on the basis of capital plus interest only (that is, other investors would receive any upside above this amount).

Deliberately, the project's designers asked for no special rights. The fund managers were given responsibility for making and managing investments without government interference. NZVIF leaders participated in investor governance decisions on the same terms as private investors, with the same voting rights. Investor governance arrangements reflected current market practice. The funds were geared toward investors in early-stage companies, and every dollar had to be matched with two dollars from the private sector.

NZVIF's decision to invest in a fund is made following completion

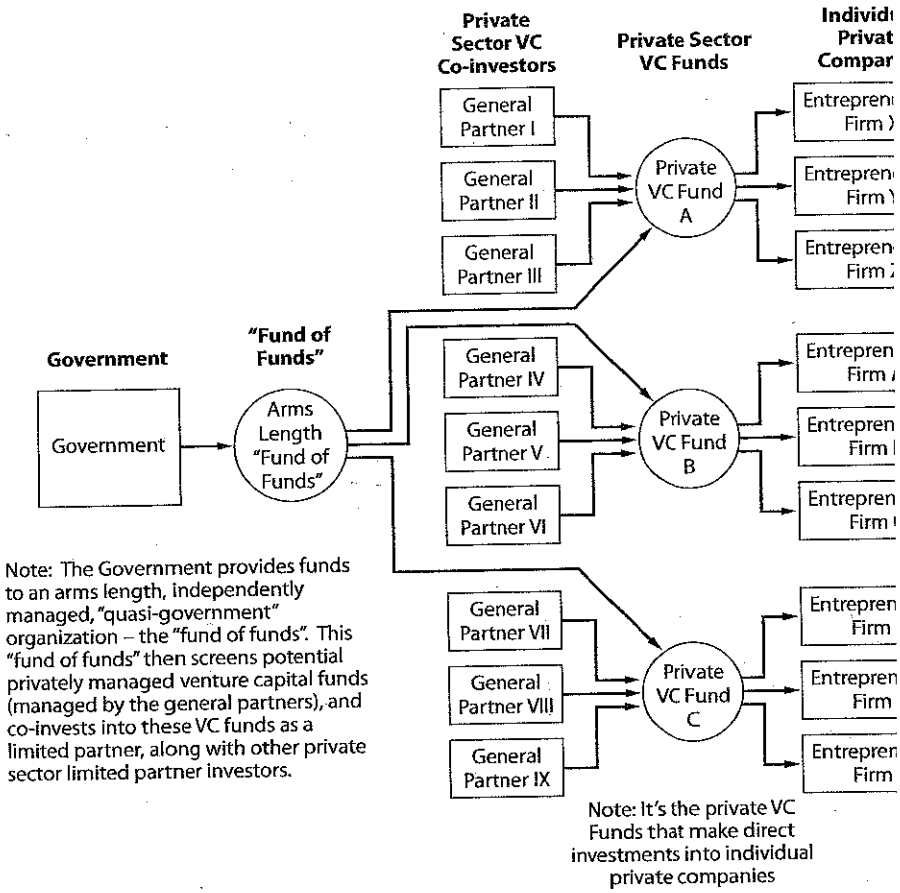

Figure 6.3. Schematic drawing of public fund-of-funds structure

of an extensive selection and due diligence process, undertaken by th fund manager, to determine whether the fund proposal is "investmen grade." The initial screening is done by the staff, followed by an out side assessment by an independent specialist private equity advisor. A standard methodology and fixed criteria are used to assess and rank al applications. In many cases, the staff work actively with teams o would-be venture fund managers to help them make their proposal more attractive (for instance, helping them identify prospective addi

tional individuals who can contribute needed experience). This is necessitated by the limited supply of New Zealand–based funds. Following the completion of external due diligence, the NZVIF board selects those applicants with whom it wishes to negotiate investment terms.

As part of the negotiations, a monitoring and reporting framework is agreed with each NZVIF seed fund manager. This enables NZVIF to collect the economic and financial data it needs for the required regular reports on the performance of each fund and the impact of the program. This also enables NZVIF to monitor each fund to ensure it is compliant with its investment agreement and investor governance requirements. Once fund agreements are finalized, investment activity commences.

Final Thoughts

The provision of public funds to entrepreneurial companies and venture funds is a far trickier process than the "table setting" exercises described in the earlier chapters. Much can go wrong along the way.

But the experience of many programs across the globe suggests some common pitfalls that can be avoided with careful planning. In this chapter, we've highlighted two fundamental challenges that—unless properly addressed up-front—can doom a program before it begins.

The first pitfall is the failure to understand the entrepreneurial and venture capital markets. These markets are complex, and good intentions alone are not enough to overcome fundamental flaws. Any number of poor design decisions—from expecting the effort to bear fruit too quickly, to creating too large or too small a program, to inflexibility in design—can doom an effort.

The second danger is a top-down approach, in which bureaucrats mandate which sectors or locations are to be funded, without listening to what the market is saying. Whatever the motivations for such targeted funding, it is likely to be a road to disaster. Programs are more successful if the entrepreneurs or venture capitalists receiving public funds have to raise matching capital from private sector sources as

well. In this way, the market can help sort out which players are likely to succeed, and who will probably be ineffective.

Good design is essential. But the successful implementation of a program also has tricky aspects. These challenges will be our focus in chapter 7.

CHAPTER 7

How Governments Go Wrong: Bad Implementation

Even if a program to encourage entrepreneurship is well conceptualized, things can still go wrong once it is begun. The implementation of these programs requires many decisions. While decision making about programs may seem like an obscure, even arcane topic, it is incredibly important. As we'll see from many examples in this chapter, program administrators can make seemingly reasonable decisions that turn out to be destructive.

This chapter will consider three of the most common errors in implementation. Ignoring the need for well-directed incentives, not evaluating what is happening with the program, and failing to allow beneficial internationalization are all mistakes that can be extremely costly, as we will see in the pages that follow.

Not Worrying about Incentives

In addition to providing a clear signal of where the market sees the greatest opportunities (a benefit we discussed in the previous chapter), matching funds have another advantage. If a significant share of the matching funds comes from the managers themselves, they are likely to focus on making sure the investments do well. Yet in many cases, overseers of public entrepreneurship initiatives have not demanded such provisions, and the results have often been disastrous. In particular, the people receiving the funds may adopt a "Heads I win, tails you lose" mentality, which leads to unfortunate outcomes.

Experienced investors in entrepreneurial firms pay an enormous