

## **The Boulevard of Broken Dreams: Innovation Policy and Entrepreneurship**

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The financial crisis and recession that began in 2008 opened the door to massive public interventions in the Western economies. In many nations, governments responded to the threats of illiquidity and insolvency by making huge investments into troubled firms, frequently taking large ownership stakes.

The magnitude of these investments boggles the imagination. Consider, for instance, the over \$150 billion invested by the U.S. government in AIG in September and November 2008 in exchange for 81% of the firm's stock, without any assurances that the ailing insurer will not need more funds. Or the Swiss government's infusion of \$60 billion into UBS in exchange for just under 10% of the firm's equity: this capital represented about 20% of the nation's gross domestic product.<sup>2</sup>

Many concerns can be raised about these investments, from the hurried way in which they were designed by a few people behind closed doors to the design flaws that many experts anticipate will limit their effectiveness. But one question has been lost in the discussion. If these extraordinary times call for massive public funds to be used for economic interventions, should they be entirely devoted to propping up troubled entities, or at least partially devoted to promoting new enterprises? In some sense, 2008 saw the initiation of a massive global experiment in the government as venture capitalist, but as a very peculiar type of venture capitalist: one that focuses on the most troubled and poorly managed firms in the economy, some of which may be beyond salvation.

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<sup>2</sup>“AIG Gets \$150 Billion Government Bailout; Posts Huge Loss,” *Reuters News Service*, November 10, 2008, and Nelson D. Schwartz, “UBS Given an Infusion of Capital,” *New York Times*, October 16, 2008.

A two-sided picture frames the basic puzzle at work here. When we look at the regions of the world that are, or are emerging as, the great hubs of entrepreneurial activity in the world—places such as Silicon Valley, Singapore, Tel Aviv, Shanghai, Bangalore, and Dubai—the stamp of the public sector is unmistakable. Enlightened government intervention played a key role in creating each of these regions. But for each effective government intervention, there have been dozens, even hundreds, of disappointments, where substantial public expenditures bore no fruit.

This scenario might lead the reader to conclude that the pursuit of entrepreneurial growth by the public sector is a massive casino. The public sector is simply making bets, with few guarantees of an attractive return. Perhaps there are no lessons to be garnered from the experiences of the programs that did and did not meet their goals of stimulating entrepreneurial activity.

The truth, however, is very different. When we look at the abandoned efforts by governments to promote venture and entrepreneurial activity, in many, many cases, the fact that the programs did not meet their goals were completely predictable. These efforts have featured a shared set of flaws in their design, which doomed them virtually from the start. In many corners of the world, from Europe and the United States to the newest emerging economies, the same classes of problems have reappeared.

Fast-growing entrepreneurs have attracted increasing attention both in the popular press and from policymakers. These business creators and the investors who fund them have been seen as having played a dramatic role in creating new industries and revitalizing economies. Many nations have launched efforts to encourage this activity. Such attention is only likely to intensify as nations seek to overcome the deleterious effects of the credit crunch and its recessionary aftereffects.

This article is an effort to shed light on the process by which governments can avoid heading down an avenue of false hope, making all too common mistakes in an attempt to stimulate entrepreneurship. One limitation is that we won't be looking at all efforts to boost entrepreneurship. In recent decades, there has been an explosion in the number of efforts to provide financing and other forms of assistance to the poorest of the world's poor, in order to facilitate their entry into entrepreneurship or the growth of the small ventures they already have. Typically, these are "subsistence" businesses, offering services such as snack preparation or clothing repair. Such businesses typically allow the business owner and his or her family to get by, but little else. The

public policy literature—and indeed academic studies of new ventures—often have not been very careful in making this distinction between which types of businesses are being studied.

Our focus here will be exclusively on high-potential new ventures and the policies that enhance them. This choice is not intended to diminish the importance or relevance of efforts to boost micro-enterprises, but rather reflects the complexity of this field: the dynamics and issues involving micro-firms are quite different from their high-potential counterparts.<sup>3</sup> As we'll see, a substantial literature suggests that promising entrepreneurial firms can have a powerful effect in transforming industries and promoting innovation.

It might be obvious to the reader why governments would want to promote entrepreneurship, but why also the frequent emphasis on venture funds as well? The answer lies in the challenges facing many start-up firms, which often require substantial capital. A firm's founder may not have sufficient funds to finance these projects alone, and therefore must seek outside financing. Entrepreneurial firms that are characterized by significant intangible assets, expect years of negative earnings, have uncertain prospects, and are unlikely to receive bank loans or other debt financing. Venture capital—as independently managed, dedicated pools of capital that focus on equity or equity-linked investments in privately held, high growth companies—can help alleviate these problems.

Typically, these investors do not primarily invest their own capital, but rather raise the bulk of their funds from institutions and individuals. Large institutional investors, such as pension funds and university endowments, are likely to want investments in their portfolio that have the potential to generate high yields, such as venture capital, and typically do not mind placing a substantial amount of capital in investments that are cannot be liquidated for extended periods. Often, these groups have neither the staff nor the expertise to make such investments themselves. Thus, they invest in partnerships sponsored by venture capital funds, which in turn provide the funds to young firms.

Instead, we will explore efforts that seek to promote the growth of high-potential entrepreneurial ventures, as well as the venture funds that fund them. We'll highlight that while the public sector role is important in stimulating these activities, far more often than not public

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<sup>3</sup> For a discussion of these issues, see Antoinette Schoar, “The Divide between Subsistence and Transformational Entrepreneurship,” *Innovation Policy and the Economy*, 10 (2010) 57-81.

programs have not met their goals. Many of these disappointments could have been avoided, however, if the leaders had taken some relatively simple steps in designing and implementing these efforts.

It is also important to note that the focus of this article is on new ventures, rather than restructurings, leveraged buyouts, and other later-stage private equity investments. Later-stage private equity resembles venture capital in a number of respects, sharing similar legal structures, incentive schemes, and investors. Those funds also invest in entities that often find external financing difficult to raise: troubled firms that need to undergo restructurings. Similar to venture capitalists, buyout funds protect the value of their equity stakes by undertaking careful due diligence before making the investments and retaining powerful oversight rights afterwards. But the organizations that finance these high-risk, potentially high-reward projects in mature firms pose an interesting—but quite different—set of issues. They are thus the topic for another work!

I also shy away from the answer to the often-asked question of what makes a good industry for a given nation to promote at a particular time. These questions have, of course, no “one size fits all” answer, but are very specific to the individual circumstances. While the industrial organization and strategy analyses needed to answer these questions are fascinating, they would take us too far afield.

### *The Boulevard of Broken Dreams*

Our understanding of the ideal policies to promote new ventures is still at an early stage. But the desire for information on how to encourage entrepreneurial activity is very real. Particularly in an era of economic turmoil and recession, governments are looking to entrepreneurial ventures to serve as an economic spark plug that will reignite growth.

If we have heard too many pronouncements of Silicon Valley patriarchs, we might begin with the view of new ventures as an activity where the government has nothing to contribute.<sup>4</sup> Isn't this the realm of heroic entrepreneurs and investors, as far removed from pointy-headed government bureaucrats as imaginable?

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<sup>4</sup> See, for instance, T. J. Rodgers, *Why Silicon Valley Should Not Normalize Relations with Washington D.C.* (Washington, D.C.: Cato Institute, 2000), 2–9.

A review of the history of Silicon Valley and several of the pioneering venture capital groups suggest find that reality is far more complex than some of our more libertarian entrepreneur friends might have us believe. In each case we look at, the role of the government as an initial catalyst was critical in stimulating the growth of the region, sector, or firm.

This is not to minimize that miscues were made along the way. There were any number of challenges with these efforts:

- Silicon Valley’s pioneers labored with a “stop-and start” pattern of government funding: war-times would see a surge of funding for research and procurement, which would frequently disappear upon the cessation of hostilities.<sup>5</sup>
- The founders of pioneering venture groups, such as American Research and Development and 3i, did not clearly distinguish in their early years between social goals and financial objectives, which led to a muddled mission and confused investors.<sup>6</sup>
- The Small Business Investment Company program was initially poorly designed, with numerous counter-productive requirements, and then implemented inconsistently, which led to the proliferation of incompetent and even outright crooked funds.<sup>7</sup>

Despite these caveats, it seems clear from these mini-cases that the role of the public sector—or in the case of American Research and Development, individuals operating with a broader social framework in mind—proved to be a critical component in catalyzing growth.

Rationales for government efforts to stimulate entrepreneurship rest on two pillars. First, the role of technological innovation as a spur for economic growth is now widely recognized. Indeed, policy statements by governments worldwide highlight the importance of encouraging innovation as a key to meeting goals to sustain economic growth and prosperity.

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<sup>5</sup> See Stuart W. Leslie and Robert H. Kargon, “Selling Silicon Valley: Frederick Terman’s Model for Regional Advantage,” *Business History Review* 70 (1996): 435–72; Annalee Saxenien, *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* (Cambridge: Harvard University Press, 1994); and especially Timothy J. Sturgeon, “How Silicon Valley Came to Be,” in *Understanding the Silicon Valley: Anatomy of an Entrepreneurial Region*, ed. Martin Kenney (Stanford: Stanford University Press, 2000), 15–47.

<sup>6</sup> Spencer Ante, *Creative Capital: Georges Doriot and the Birth of Venture Capital* (Boston: Harvard Business School Press, 2008); and Patrick R. Liles, *Sustaining the Venture Capital Firm* (Cambridge, Mass.: Management Analysis Center, 1978).

<sup>7</sup> C. M. Noone and S. M. Rubel, *SBICs: Pioneers in Organized Venture Capital* (Chicago: Capital Publishing, 1970); Jonathan J. Bean, *Big Government and Affirmative Action: The Scandalous History of the Small Business Administration* (Lexington: University Press of Kentucky, 2001); and Liles, *Venture Capital Firm*.

Second, academic research has highlighted the role of entrepreneurship and venture capital in stimulating innovation.<sup>8</sup> These financiers and firms have developed a set of tools that are very well suited to the challenging task of nurturing high-risk but promising new ideas. One study estimates that because of these approaches, a single dollar of venture capital is as powerful in generating innovation as three dollars of traditional corporate research and development. Venture capital and the entrepreneurs they fund will never supplant other wellsprings of innovation, such as vibrant universities and corporate research laboratories (in an ideal world, these will all feed on each other). But in an innovative system, a healthy entrepreneurial sector and venture capital industry will be important contributors.

If that were all there was to it, there would be a pretty compelling case for public involvement. And there probably would not be a need for this essay! But the case for public intervention rests as well on a third leg: the argument that governments can effectively promote entrepreneurship and venture capital. And this is a much shakier assumption.

To be sure, the characteristics of entrepreneurial markets have features that allow us to make a credible intellectual case that there is a natural role for government in encouraging their evolution. Entrepreneurship is a business where there are increasing returns. Put another way, it is far easier being a start-up founder if there are ten other entrepreneurs nearby than if one is alone. In many respects, firm founders and venture capitalists benefit from their peers. For instance, if entrepreneurs are already active in the market, investors, employees, intermediaries such as lawyers, data providers, and the wider capital markets are likely to be knowledgeable about the venturing process and what it requires in terms of strategy, financing, support, and exit mechanisms. In the language of economics, entrepreneurship and venture capital are activities where the actions of any one group are likely to have positive spillovers—or “externalities”—for their peers. It is in these types of settings where the government can often play a very positive role as a catalyst.

Reflecting this observation, there are numerous examples where government intervention has triggered the growth of a venture capital sector. For instance, the Small Business Investment Company (SBIC) program in the United States led to the formation of the infrastructure for much of

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<sup>8</sup> Thomas Hellmann and Manju Puri, “The Interaction between Product Market and Financing Strategy: The Role of Venture Capital,” *Review of Financial Studies* 13 (2000): 959–84; and Samuel S. Kortum and Josh Lerner, “Assessing the Contribution of Venture Capital to Innovation,” *Rand Journal of Economics* 31 (2000): 674–92.

the modern venture capital industry. Many of the early venture capital funds and leading intermediaries in the industry—such as lawyers and data providers—began as organizations oriented to the SBIC funds, and then gradually shifted their focus to independent venture capitalists. Similarly, public programs played an important role in triggering the explosive growth of virtually every other major venture market around the globe.

But there are reasons to be cautious about the efficacy of government intervention. In particular, I highlight two well-documented problems that can derail these programs. First, government programs can simply get it wrong: allocating funds and support in an inept or, even worse, a counter-productive manner. An extensive literature has examined the factors that affect the quality of governmental efforts in general, and suggests that more competent programs are likelier in nations that are wealthier, with more heterogeneous populations, and an English legal tradition.

Economists have also focused on a second problem, delineated in the theory of regulatory capture.<sup>9</sup> These writings suggest private and public sector entities will organize to capture direct and indirect subsidies that the public sector hands out. For instance, programs geared towards boosting nascent entrepreneurs may instead end up boosting cronies of the nation's rulers or legislators. Among the annals of government venturing programs, examples abound of ways in which these efforts have been hijacked in such a manner.

Unfortunately, even without delving into the much-discussed misadventures of the Obama administration with cleantech investing, there is no shortage of examples of both problems in the history of public venturing programs:

- In its haste to roll out the Small Business Investment Company program in the early 1960s, the U.S. Small Business Administration chartered—and funded—hundreds of funds whose managers were incompetent or crooked.
- The incubators taking part in Australia's 1999 BITS program frequently captured the lion's share of the subsidies aimed towards entrepreneurs, by forcing the young firms to purchase their own overpriced services.

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<sup>9</sup> The articulation of this model in the economics literature is frequently attributed to Mancur Olson, *The Logic of Collective Action* (Cambridge: Harvard University Press, 1965); and George Stigler, "The Economic Theory of Regulation," *Bell Journal of Economics* 2 (1971): 3–21; its formal modeling to Sam Peltzman, "Towards a More General Theory of Regulation," *Journal of Law and Economics* 19 (1976): 211–40; and Gary S. Becker, "A Theory of Competition among Pressure Groups for Political Influence," *Quarterly Journal of Economics* 98 (1983): 371–400.

- Malaysia opened a massive BioValley complex in 2005 with little forethought as to whether there would be any demand for the facility. The facility soon became known as the “Valley of the Bio-Ghosts.”
- Britain’s Labor and Conservative governments subsidized and gave exclusive rights in the 1980s to the biotechnology firm Celltech, whose management team was manifestly incapable of exploiting those resources.
- Norway squandered much of its oil wealth in the 1970s and 1980s propping up failing ventures and funding ill-conceived new businesses begun by relatives of parliamentarians and bureaucrats.

### *Strategies and Their Limitations*

Policies that governments employ to encourage venture capital and entrepreneurial activities take two forms: those that ensure that the economic environment is conducive to entrepreneurial activity and venture capital investments and those that directly invest in companies and funds.

First, it is necessary to ensure that entrepreneurship itself is an attractive option. Often, in their eagerness to get to the “fun stuff” of handing out money, public leaders neglect the importance of setting the table, or creating a favorable environment.

Such efforts are likely to have several dimensions. Ensuring that creative ideas can move easily from universities and government laboratories is critically important. But many entrepreneurs come not from academia, but rather from corporate positions, and studies have documented that the attractiveness of entrepreneurial activity for these individuals is very sensitive to tax policy. Also important is ensuring that the law allows firms to enter into the needed contracts—for instance, with a potential financier or a source of technology—and that these contracts can be enforced. Finally, education is likely to be critical. Ensuring that business and technology students are exposed to entrepreneurship classes will allow them to make more informed decisions; and creating training opportunities in entrepreneurship for mid-career professionals is also likely to pay dividends.

Second, it is important to ensure that international investors find the nation or province an attractive one in which to invest. In most entrepreneurial hubs that have emerged in the past two decades, the critical early investments have not been made by domestic institutions, but rather by sophisticated international investors. These investors are likely to have the depth of knowledge and

experience that enables them to make substantial bets on the most promising organizations. But these players are likely to be very reluctant to take part if regulatory conditions are not up to global standards, or if there are substantial concerns about the ability of investors to exit investments. Reaching out to interested and skilled individuals overseas—most often, expatriate entrepreneurs—can also provide a source of capital and expertise.

A final important—though very challenging—role for government is to intervene directly in the entrepreneurial process. As noted above, these programs must be designed thoughtfully, so as to be sensitive to the private sector's needs and to the market's dictates. Because of the “increasing returns” nature of entrepreneurship, these efforts can play an important role in the industry's early days.

At the same time, governments must avoid the common pitfalls that befall public venture initiatives. I divide these pitfalls into two categories: conceptual issues, which doom a program from its very start, and implementation issues, which create problems as the programs enter operation.

One common conceptual problem is to ignore the realities of the entrepreneurial process. For instance, many public venture capital initiatives have been abandoned after a few years: the programs' authors have apparently not understood that these initiatives take many years to bear fruit. Others have added requirements—such as the stipulation that portfolio companies focus only on explicitly “pre-commercial” research—that while seemingly reasonable from a public policy perspective, run counter to the nature of the entrepreneurial process. In other cases, reasonable programs have been created that are too tiny to have any impact or so large that they swamp the already-existing funds.

A second frequently encountered conceptual problem is the creation of programs that ignore the market's dictates. Far too often, government officials have sought to encourage funding in industries or geographic regions where private interest simply was not there. Whether driven by political considerations or hubris, the result has been wasted resources. Effective programs address this problem by demanding that credible private sector players provide matching funds.

These broad design problems can ensure that a program will not meet its goals even before it is started. But there are plenty of pitfalls once programs begin. One frequently encountered

implementation problem is not worrying about incentives. Far too often, participants in public schemes to promote entrepreneurship do well, no matter whether the program meets the public sector's objectives. In fact, in many instances, they do well even if the companies go belly-up! The contrast with the best practices among private investors, where a scrupulous attention to incentives is commonplace, could not be more striking. Public initiative managers must pay far more attention to what will happen in various scenarios, and how incentives can lead to problematic behavior.

Another implementation pitfall is the absence of appropriate evaluative mechanisms. Ideally, programs will undergo careful scrutiny at two levels. First, each program will be carefully analyzed. While recognizing that any initiative will take time to bear fruit, it is important to periodically take stock as to what aspects appear to be working well and which are problematic. Second, fund managers and firms participating in the programs should be scrutinized. It is important to ensure that the groups benefiting from these programs are the most promising in the industry in terms of market performance and can benefit the most from public investment, rather than simply being those most adept at garnering public funds.

A final frequent implementation issue is to ignore the international nature of the entrepreneurial process. Today's venture industry is a global one on many levels. Limited partners' capital commitments, venture capitalists' investments, and entrepreneurial firms' spending increasingly flow across borders and continents. To attempt to build a local entrepreneurial sector and venture capital industry without strong global ties is a recipe for an irrelevant sector without much economic impact. Yet in many instances, international participation is actively discouraged.

#### *Research and Case Study Findings re Program Outcomes*

Many policymakers suggest that they are primarily interested in enhancing the growth and dynamism of entrepreneurial companies in their region as a lever for overall regional or national economic performance. Our research suggests a few policy levers consistent with achieving that objective:

- *Remember that entrepreneurial activity does not exist in a vacuum.* Entrepreneurs are tremendously dependent on their partners. Without experienced lawyers able to negotiate agreements, skilled marketing gurus and engineers who are willing to work for low wages and a handful of stock options, and customers who are willing to take a chance on young firms, new ventures are unlikely to be able to grow. But despite the importance of the

entrepreneurial environment, in many cases government officials gravitate straight to handing out money without thinking about the other barriers that entrepreneurs face. This behavior is unlikely to address the problems of these firms. In some cases, crucial aspects of the entrepreneurial environment may initially seem somewhat tangential: for instance, the importance of robust public markets for young firms as a spur to venture investment. Singapore provides a great example of a nation which took a broader view, and sought not just to address deficiencies in the availability of capital, but the many other barriers that limited the creation of a productive arena in which entrepreneurs could operate.

- *Leverage the local academic scientific and research base more effectively.* One particular pre-condition to entrepreneurship deserves special mention: in many regions of the world, there is a mismatch between the low level of entrepreneurial activity and venture capital financing on the one hand and the strength of the scientific and research base on the other. The role of technology transfer offices is absolutely critical here. Effective offices do far more than simply license technologies, but also work closely to educate nascent academic entrepreneurs and facilitate introductions to venture investors. Building the capabilities of local technology transfer offices, and ensuring that both potential academic entrepreneurs and technology transfer personnel have opportunities for training about the nature and mechanics of the new firm formation process, is critically important. In particular, all too often, technology transfer offices are encouraged to maximize the short-run return from licensing transactions. This leads to an emphasis on transactions with established corporations that can make substantial upfront payments, even though considerable evidence suggests that licensing new technologies to start-ups can yield substantial returns in the long run, both to the institution and to the region as a whole. If policy-makers are earnest about developing an entrepreneurial sector, it is important that they think seriously about the way in which technology transfer is being undertaken, the incentives being offered, and their consequences.
- *Respect the need for conformity to global standards.* It is natural to want to hold onto long-standing approaches in matters such as securities regulation and taxes. In many cases, these approaches have evolved to address specific problems, and have proven to be effective responses. Despite this understandable reluctance to change, there is a strong case for adopting the *de facto* global standards if a nation is serious about promoting entrepreneurship and venture capital. Global institutional investors and venture funds are likely to be discouraged if the customary partnership and preferred stock structures cannot be employed in a given nation. Even if a perfectly good alternative exists, they may be

unwilling to devote the time and resources to explore this option. Unless one is located in a nation such as China—where global investors will feel compelled to master the system, no matter how complex, owing to the size of the market opportunity—there is much to be said for allowing transactions that conform to the models widely accepted as best practice.

- *Be sure to let the market provide direction when providing subsidies to stimulate entrepreneurial and venture activity.* As noted above, two efforts which largely have met their goals (at least to date) have been the Israeli Yozma program and the New Zealand Seed Investment Fund. While these programs differed in their details—the former was geared towards attracting foreign venture investors, the latter encouraged locally-based, early-stage funds—they shared a central element: each used matching funds to direct where public subsidies should go. In undertaking these efforts, it should be kept in mind:
  - The identification of appropriate firms or funds is not likely to take place overnight. Rather than starting with the expectation of funding dozens of groups immediately, it typically makes sense to first fund a handful of entities. As feedback is received from the early participants, it may be appropriate to launch a second and third batch, or instead to supplement the capital of the pioneering firms and funds.
  - It is important that these initiatives not become competitors with independent venture funds or engage in the protracted financing of sub-standard firms that cannot raise private financing. Thus, these efforts, emulating initiatives that have met their goals in the past, should require a substantial amount of funds to be raised from non-public sources.
  - In selecting venture funds to which to provide capital, it is important to realize that it may be a challenge to interest top-tier venture groups. Rather, the expectation should be that a given region can attract solid groups with a particular interest in industries where there is already real local strength.
  - In the same spirit, policy-makers may wish to cast their net broadly in terms of the types of firms and funds that they seek to attract. In addition to traditional stand-alone start-up venture funds, they may wish to consider encouraging corporate spin-outs and venture funds as well.
  - In encouraging seed companies and groups, leaders should be aware that in many cases, extensive intervention may be needed before they are “fund-able.” This may entail working closely with the organizations to refine strategies, recruit additional partners (perhaps even from other regions), and identify potential investors. Moreover, it is important that the firms and groups understand that they need to

retain enough “dry powder” so that they do not go belly-up once the government subsidies run out. Having the right leader for this program is critical if these interventions are to be effective.

- Policy-makers should publicize in advance their evaluation criteria for assessing prospective firms and fund. These evaluation standards should be close to those employed in the private sector for assessing entrepreneurs and venture funds.
- *Resist the temptation to “over-engineer” entrepreneurship and venture capital initiatives.* In many instances, government requirements that limit the flexibility of entrepreneurs and venture investors have been very detrimental. It is tempting for policymakers to add restrictions on several dimensions: for instance, the locations in which the firms can operate, the type of securities venture investors can use, and the evolution of the firms going forward (e.g., restrictions on acquisitions or secondary sales of stock). The government should eschew such efforts to “micro-manage” the nature of the entrepreneurial process. While it is natural to expect that firms and groups receiving subsidies will retain a local presence or continue to target the local region for investments, these requirements should be as minimal as possible.
- *Recognize the long lead times associated with public venture initiatives.* One of the common challenges of public entrepreneurship and venture capital initiatives has been excessive impatience. Building an entrepreneurial sector is a long-run endeavor, which will not take place overnight. It is important that the programs that appear to have some initial promise be given enough time to prove their merits. Far too often, promising initiatives have been abandoned on the basis of partial (and often, not the most critical) indicators: for instance, low interim rates of return of initial program participants. Moreover, in many cases politicians have very unrealistic expectations about the likelihood of job growth in the short- and medium-term from these efforts. On the one hand, there is no doubt that high-impact young firms are an engine of overall job creation for the economy, and that this is particularly true at the regional level.<sup>10</sup> At the same time, even a substantial amount of innovation-driven entrepreneurship may not overcome a “jobs” problem very great speed: as the last few years have illustrated, massive layoffs automobile manufacturing and construction are not going to be solved with even an extremely well-run biotech

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<sup>10</sup> See several of the earlier papers in this series, most recently John Haltiwanger, “Job Creation and Firm Dynamics in the U.S.,” *Innovation Policy and the Economy*, 12 (2012) forthcoming.

incubator. Having unrealistic expectations and too much impatience—and consequently creating rules that force program participants to focus on short-run returns—is a recipe for disappointment.

- *Avoid either too large or too small initiatives.* Policy-makers must walk a tight-rope in finding the appropriate size for venture initiatives. Too small a program will be unlikely to have much of an impact in addressing the challenging environment facing pioneering entrepreneurs and venture funds. Moreover, inflated expectations may create a backlash that makes future efforts difficult. But too substantial efforts run the risk of swamping the local markets. The imbalance between plentiful capital and limited opportunities may introduce any number of pathologies. Consider the experience of the Canadian labor fund program. Not only did it end up backing mostly incompetent groups that did little to spur entrepreneurship, but it had the effect of “crowding out” some of the most knowledgeable local investors.
- *Understand the importance of global inter-connections.* As this piece has repeatedly emphasized, entrepreneurship and venture capital are increasingly emerging as global enterprises. This evolution has two important consequences. First, no matter how eager policy-makers are to encourage activity in their own backyard, they must realize that to meet their goals, firms must increasingly have a multi-national presence. Efforts to restrict firms to hiring and manufacturing locally are likely to be profoundly self-defeating. Second, it is important to involve overseas investors as much as feasible. The benefits to local companies of relationships with funds based elsewhere but investing capital locally can be substantial. Moreover, initial investments which do well will attract more overseas capital. In addition, local affiliates of a fund based elsewhere—having developed an attractivetrack record—will gain the credibility they need to raise their own funds. That being said, when using public funds to subsidize activities by overseas parties, it is important to carefully question and obtain commitments from these entrepreneurs and groups about their intentions to recruit personnel to be resident locally and the extent to which the partners based elsewhere will be involved with the management of the local groups.
- *Institutionalize careful evaluations of these initiatives.* All too often, in the rush to “do something,” policy-makers make no provision for the evaluation of these efforts. The future of these initiatives should be determined by the extent that they meet their goals, rather than other considerations (such as the vehemence with which program supporters argue for their continuation). The design of careful program evaluations will help insure better decisions.

These evaluations should not consider just the individual funds and companies participating in the programs, but also the broader context. At the very least, these evaluations should:

- Gather and publicize accurate data on the extent of high-potential entrepreneurship and formal and informal venture capital activity. Some of this information can be collected beginning immediately; other information can only be gathered after some activity. These data will be important not only for the program evaluations, but also to publicize the growing size and dynamism of the local venture market to prospective investors.
- Compare publicly supported firms and venture groups to their peers to infer the difference the program has made.
- Carefully track the performance of the companies that are and are not participating in the program, including not just financial returns but also such elements as sales and employment growth.

The evaluators may also wish to consider whether it would be feasible to randomize at least some awards, or explore the use of regression discontinuity analysis in the evaluations.

- *Realize that the programs to promote entrepreneurship and innovation need creativity and flexibility.* Too often, public venturing initiatives are like the pock-faced villain in a horror film—as much as one tries, they cannot be killed off! Their seeming immortality reflects the capture problem discussed above: powerful vested interests soon coalesce behind these initiatives, which makes them impossible to get rid of. The nations that have been the public programs with the greatest impact, on the other hand, have been willing to end programs that are not doing well, and substitute other incentives. Even more powerfully, they have been willing to end programs on the grounds that they are *too* successful—they have met their goals and hence no longer in need of public funding. Moreover, program rules may have to evolve and change, even if it means eliminating important classes of participants. If government is going to be in the business of promoting entrepreneurship, it needs some of the same qualities itself.
- *Recognize that “agency problems” are universal, and take steps to minimize their danger.* The stories in this volume illustrate that the temptations to direct public subsidies in problematic ways are not confined to any region, political system, or ethnicity. While we might wish that humanity everywhere would simply confine themselves to maximizing the public welfare, more selfish interests all too often rear their ugly heads. In designing public programs to promote venture capital and entrepreneurship, limiting the possibilities for such behavior is clearly essential. As we have seen, approaches such as defining and adhering to

clear strategies and procedures for venture initiatives, creating a “fire-wall” between elected officials and program administrators, and careful assessments of the programs can help limit these problems.

- *Make education an important part of the mixture.* The emphasis on education should have at least three dimensions:
  - The first is building the understanding of outsiders about the local market’s potential. One of the critical barriers to willingness of venture investors to invest in a given nation is a lack of information. If one visits a racetrack for the first time, it’s always nice to know whether the track favors front-runners or late closers, and who the hot local jockeys are. In the same way, institutions often feel much more comfortable investing if they can access information about the level of entrepreneurial activity in local markets, the outcomes of the investments, and so forth. An important role that government can play is directly gathering this information, or else encouraging (and perhaps funding) a local trade association to do so.
  - Second, educating entrepreneurs is a critical process. In many emerging venture markets, entrepreneurs may have a great deal of confidence, but relatively little understanding of the expectations of top-tier private investors, potential strategic partners, and investment bankers. The more that can be done to fill these gaps, the better.
  - Finally, a broad-based understanding in the public sector of the challenges of entrepreneurial and venture capital development is very helpful. As we have repeatedly highlighted, in many instances, policy-makers have made expensive errors in promoting these activities out of a lack of understanding of how these markets really work.

### *Less Consistent Approaches*

But not all suggestions are good ones. Some ideas which are frequently heard—indeed, often touted by consultants and intermediaries of various types—but are inconsistent with the global evidence on appropriate steps to build an entrepreneurial sector or venture capital.

Local entrepreneurs and venture investors frequently demand that local pools of government funds—whether sovereign funds owned by the states or pension funds for public employees—be

mandated to devote a large allocation of their general investment pool to domestic entrepreneurs or venture funds. This suggestion, while initially plausible, is problematic for several reasons.

First, as discussed above, the creation of dynamic markets appear to be largely driven by the engagement of global private equity limited partners, rather than local players. Early-stage venture funds—assuming that they can develop a reasonable track record—are likely to attract considerable interest from institutional investors. By directing funds to local groups that cannot raise money, governments are likely to be rewarding precisely the groups that don't deserve funds.

Moreover, as highlighted above, a real danger with public programs is that they end up flooding the market with far more capital than they can reasonably deploy. Such well-intentioned steps can actually end up hurting entrepreneurs and venture capitalists.

Finally, it flies in the face of the principle that public venture capital funds should rely on the market to identify where attractive opportunities are, rather than mandating activity. While it would be hoped that local pension and investment funds will eventually play an important role here, it should be at a pace that they are comfortable with.

A second bad idea is the commonly-heard demand for provisions that would give investors an immediate tax deduction when a venture capital investment is made. A frequently cited model is the CAPCO program pioneered in Louisiana and adopted by a number of American states. Unfortunately, these efforts have been largely not met their goals.

This suggestion, while initially appealing, is problematic for two reasons. First, the evidence suggests that the primary way in which tax policy encourages venture capital is through the demand side: the incentive that the entrepreneur has to (typically) quit his salaried job and begin a new firm instead. Little evidence suggests that tax policy can dramatically affect the supply of venture capital by the types of sophisticated institutional investors that provide capital to the world's leading venture industries. (Indeed, many dominant venture capital investors—such as pension funds and endowments—are exempt from taxes in most nations).

Second, one of the powerful features of the venture capital process is the alignment of incentives. Everyone—whether limited partner, venture capitalist, or entrepreneur—does not get substantial gains until the company is sold or goes public. Economists argue that such an alignment

keeps everyone focused and minimizes the danger of strategic behavior that benefits one party but hurts the firm.<sup>11</sup> Giving substantial tax incentives at the time of the investment could distort this alignment of incentives.

A third bad idea is the effort that has been tried in a number of American states to bring in an outside investment firm to manage a fund-of-funds for that locale. These efforts seem problematic for several reasons. First, the fees charged by these intermediaries are frequently substantial. These services, while they may appear small (only one percent of capital under management!) often end up eating up a huge fraction of the returns.

Second, it is by no means clear that the investments by the intermediary will be primarily driven by the local government's priorities. These fees can also create incentives to do deals for their own sake, rather than taking the steps that advance the mission of the fund. Thus, financial institution may be tempted to put the money to work quickly, so it can raise another fund (and generate more fees). Alternatively, there may be funds that the intermediary has a "special relationship" with (for instance, an investment bank's fundraising group may be gathering capital for that group). In these instances, divided loyalties will come into play, and the best interests of the government may not be served. Thus, it is not surprising that U.S. states that have tried such efforts, such as Oklahoma, have seen only very limited growth in their venture industries.

Another persistent theme—perhaps the hardest to resist—is the desirability of blindly duplicating programs and incentives provided elsewhere. For instance, many Persian Gulf states have borrowed concepts from Dubai, even if the very fact that the strategies worked for Dubai means that they are less likely to work elsewhere (such as the creation of a major air travel hub).

Moreover, in many cases, there has been a strong temptation to emulate even programs that have proved to be ill-considered elsewhere. For instance, incentive schemes in other regions that gave large tax benefits for those who invest in entrepreneurial firms have typically not met policymakers' goals in promoting entrepreneurship, yet have been widely emulated. Similarly, we have seen that the widely adopted strategy of instructing local pension fund managers to make economically targeted investments with employees' funds has had a very mixed and troubled legacy.

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<sup>11</sup> For a detailed review of the academic literature, see Paul Gompers and Josh Lerner, *The Venture Capital Cycle* (Cambridge: MIT Press, 2004), volume 2.

It is important to remember the adage that “two wrongs do not make a right.” Ill-considered steps to promote entrepreneurship and venture capital can be profoundly distorting, attracting inexperienced operators and leading to ill-fated investments. The poisonous legacy that results can discourage other legitimate investors from participating in the market for years to come and set back the creation of a healthy industry. Thus, tempting as it is to match these investment incentives offered by others, if a strategy appears ill-considered, it is best avoided.

### *Final Thoughts*

As we acknowledged in the introduction, the quest to encourage venture activity can seem like a side-show among the many responsibilities of government, from waging war to ensuring the stability of major financial institutions. Certainly, the dollars spent each year on these programs—while significant on an absolute basis—pale when compared to defense and healthcare expenditures. But the picture changes when we consider the long-run consequences of policies that facilitate or hinder the development of a venture sector: that is, the impact on national prosperity that a vital entrepreneurial climate can have. In the long run, the significance of these policies looms much larger.

So to be sure, there is a role for the government in stimulating a vibrant entrepreneurial sector, given the early stage of maturity of these activities in most nations. But at the same time, it is easy for the government to overstep its bounds and squander its investments in this arena. Only by designing a program that reflects an understanding of, and a willingness to listen to, the entrepreneurial process can government efforts be effective.

There is also a great need for more academic research in this area. This topic has not attracted the attention it really deserves. In part, this paucity reflects the fact that these programs are difficult to evaluate: In undertaking these assessments, one has to ask what would have happened without the subsidies. This may seem pretty daunting: we need to look inside a crystal ball, and figure out what would have happened in the parallel universe in which the program did not exist.

Of course, this is a familiar problem in many settings, whether evaluating new pedagogical approaches or novel pharmaceuticals. By undertaking randomized trials, in which some entities are selected for awards that would not otherwise “make the cut,” while not choosing some entities that

would be chosen otherwise, the impact of the program can be understood. The entrepreneurs who received awards that are below the cut-off score, and those who are above the line but did not get awards, are compared to their peers to get a sense of the program's impact. In this way, any unobserved differences between the awardees and the controls are eliminated. Just because those entrepreneurs who take part in a government program do better than their peers doesn't mean the program has made a difference. Rather, the applicants could have been disproportionately the best and the brightest entrepreneurs, who were smart enough to learn about the program and find the time to fill out the application. Moreover, if there was a competition for the rewards, the screening process should have picked out the better groups.

Yet such trials—however widely adopted in other areas—remain quite rare when assessing public efforts to promote entrepreneurship. A frequent objection to randomization is that it's wrong to knowingly give public money to an inferior entrepreneur. While we have long been comfortable with the use of randomized trials in medical research, where one set of cancer patients gets the experimental drug and the others get the traditional treatment, the introduction of random choices in economic development settings make many leaders profoundly nervous. Whatever the merits of their reluctance, it has blocked attempts to use randomization while assessing public venturing programs.

Fortunately, there is an alternative: the use of an approach called “regression discontinuity” analyses. Essentially, this type of analysis exploits the fact that when program managers do their assessment of potential participants, there are always going to be some applications that fall just above or just below the cut-off line. By comparing these entrepreneurs or venture funds, which are likely to be very similar to each other in everything except for the fact that some were chosen for the program and others not, one can get a good sense of the program's impact without a randomization procedure. As Adam Jaffe, one of the most vocal advocates of better evaluation approaches, has observed: “I and others have previously harped on randomization as the ‘gold standard’ for program evaluation. I now believe that [regression discontinuity] design represents a better trade-off between statistical benefits and resistance to implementation.”<sup>12</sup> But even getting access to data about rejected applicants can be a sensitive process. In part, getting better research will require policymakers who are willing to be more open to policy experiments; but it will also

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<sup>12</sup> Adam B. Jaffe, “Building Program Evaluation into the Design of Public Research Support Programs,” *Oxford Review of Economic Policy* 18 (2002): 22–34, 33.

take academics who are willing to engage in reaching out to and working with government officials to overcome their natural concerns.

These are issues of critical importance to all of us. While these issues may sometimes seem arcane and technical, well-considered—or misguided—policies are likely to profoundly influence our opportunities, as well as those of our children and grandchildren. However challenging the encouragement of entrepreneurship may occasionally seem, these issues are truly too important to be left to the policy specialists!